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X-RAY, &c., APPARATUS:—
Dean & Co.—
Diathermy Apparatus 9
Medical Supply Association—
Grevillite Improved Diathermy Apparatus 10
Siemens Brothers & Co.—
X-Ray Outfits 8
Electro-Medical Apparatus 8
Apparatus and Tubes for Special Work 8
Radium 8

MISCELLANEOUS:—
Bates—Rubber Gloves Repaired, &c. 6
Box 117, Bradford—Croquet and bowls 47
Box 1106, Bradford—Tennis 47
Electric-X-ray and High-frequency Equipment 47
Grieve—Instruction in Cultivation, Marketing, &c. 47
Hackwood—Surgical Nurse 46
No. 955, L.O., Strand—
Superintendent 46
No. 978, L.O., Strand—Chauffeuse. 46

Observations ON FIFTY LAPAROTOMIES

PERFORMED FOR GUNSHOT WOUNDS OF THE ABDOMEN.

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IN the following article we give the results of 50 laparotomies on gunshot wounds of the abdomen performed at a casualty clearing station. This clearing station is at present situated roughly about 5½ miles from our nearest front line trenches. The town is frequently bombed, but up to the present has escaped shelling, except on one isolated occasion. A building formerly used as a college for French boys has been adapted to meet the requirements of our patients.

It will be seen from our list of cases that many of the patients were operated on within 5 or 6 hours of their being wounded, our record in this respect being 2½ hours. Many others, however, did not reach us for 12 to 24 hours, and this may seem at a first glance to be a long period of time to cover a distance of 5½ miles. It must, however, be remembered that many factors enter into the question of transit of wounded at the front. Thus, during the winter, the communication trenches may be quite impassable for stretcher parties. In such circumstances the wounded man is kept in the front line trench until darkness makes it possible for his conveyance over exposed ground. Again, the roads leading to this town from the various dressing stations are often heavily shelled, making the transport of wounded impossible for several hours, and long detours have frequently to be made to escape a certain segment of road. It will therefore be easily understood how the time in individual cases must vary enormously, according to the military circumstances prevailing at the moment, and the fact that cases have arrived here in the short periods mentioned must frequently have meant great devotion to duty on the part of the regimental medical officer and stretcher bearers. As an example of what occurs the following case may be quoted. An officer was badly wounded in the abdomen while superintending a working party behind our trenches. In getting him to the first-aid post a bullet passed through one stretcher bearer, killing him at once, and lodged in the already badly wounded officer's arm, fortunately doing him little additional harm.

EXPECTANT TREATMENT.

As this unit came out to France with the original Expeditionary Force in August, 1914, it might perhaps be of interest to make in the first place a few comments on the treatment of abdominal wounds in the early days of the war, when expectant methods were the routine. Since then we have had considerable alteration in opinion regarding abdominal wounds, and the development of the clearing station, with its facilities for operation and nursing close to the firing line, has completely altered our outlook in such cases.

Until the beginning of 1915 it was the custom that abdominal cases should be kept, as far as possible, near the spot where the patient received his wound. In practice this meant usually one or other portion of a field ambulance, although in one instance, so firmly had the lessons of the South African War taken hold, one officer hit in the abdomen refused to be removed from his dug-out, and in fact died there in two days time. This being the case, many of the most severe abdominal cases must of necessity have died before they reached the clearing station, and any figures we give must be inclined towards optimism, rather than pessimism, for the expectant methods of treatment.

In the pre-operation days at this clearing station we had what we called an abdominal ward, where all cases suspected of intraperitoneal injury were placed to undergo the treatment of starvation and morphia. We have from our admission and discharge books made an analysis of the figures for these cases with the following results:—

Total cases	335
Transferred to the base	201
Deaths	134

This gives the low mortality of 40 per cent., which is undoubtedly fallacious in comparison with our operative statistics for the following reasons: 1. Many of the abdominal cases died at field ambulances, and the chief cases we treated here were those not considered to be intraperitoneal when examined at the field ambulance. 2. Evidence is entirely lacking as to the number of real intraperitoneal cases. 3. We have no evidence of the future course of our (so-called) recoveries. If this mortality of 40 per cent. is more thoroughly investigated a much more valuable result is arrived at from the point of view of treatment. The following is the analysis of the total deaths with reference to the period of time the man *was able to survive* his wound:—

Total number of deaths	134
Died in 48 hours after admission	84
After 3 days	50

In the light of experience this means that 37 per cent. of the patients who died here were able to survive their injuries for over three days, and then died of peritonitis caused by leakage of intestinal contents, which might have been prevented if operative measures had been adopted on admission. It means, in fact, that of these 50 cases many lives would have been saved by operative interference and probably a certain number of the 84. Of the 201 cases transferred to the base, the majority were evacuated by us after two or three days, which proves, in our opinion, that these were not intraperitoneal.

TYPES OF ABDOMINAL WOUNDS.

The following is a very arbitrary classification of the clinical type of abdominal wounds:—

Class 1.—Those which are without doubt intraperitoneal.—This includes the large class of case with entrance wound in the anterior and exit wound in the posterior abdominal wall, or *vice versa*, which must of necessity be intraperitoneal and may injure any viscus or structure contained in the abdominal cavity.

Class 2.—Those wounds apparently intraperitoneal (from their entrance and exit) which are really extraperitoneal.—The commonest variety of this class is the "side-to-side" wound of the anterior abdominal wall. In such cases a bullet often follows the planes of the abdominal muscles and does not enter the peritoneum. Such wounds may cause intraperitoneal lesions without perforating the peritoneum (*vide* Case 28).

Class 3.—Those which are doubtful, occurring in the flanks.—This is a very large class, nearly all the wounds of which require an examination under an anæsthetic to investigate their course. Many wounds of this class injure the large bowel only and remain still extraperitoneal, the result being a fæcal fistula. Others cause a fracture of the pelvic bones, and others, again, may cause intraperitoneal lesions without actually perforating the peritoneum, as in Class 2. Those which involve the pelvic bones may often produce marked shock.

Class 4.—Those wounds which are extraperitoneal but have their entrance in regions situated at a distance from the abdominal cavity.—These include wounds of the buttocks, chest, shoulder, &c., and are very apt to be overlooked. In the region of the anus and fold of the nates it is especially easy to miss the entrance wound of a bullet, which in these regions often amounts to only a tiny slit in the skin.

Class 5.—Those wounds involving the peritoneal cavity plus other important extraperitoneal structures—e.g., small intestine plus spine, small intestine plus bladder, stomach plus lung, &c.

CONDITION ON ADMISSION.

The easy case from the diagnostic point of view is the severe one. The prostrate patient, pallid, anxious, and cold, with a bluish tinge on the lips which fades into the general grey pallor of the face without the usual line of colour demarcation; the low petulant cry for drinks; the cry of pain on movement of the body or extension of the lower limbs; the site of the wound in abdomen, back, flanks, or buttocks; the pulse rapid, small, and of very low tension; the abdomen hard and moving only slightly on respiration, with dullness all over or in the flanks; and a history of, or the presence of, vomiting—these form a group of signs and symptoms by which a diagnosis can often be made at a glance, and for a patient of this sort operation at the

earliest possible moment is the only treatment. Even though no pulse can be felt, an operation is not thereby contra-indicated, as it gives the last possible chance to the patient. In a few cases the imminence of death is apparent from the mode of respiration, and these are beyond the surgeon's aid. In such cases the abdomen may be quite soft.

The more difficult cases are those in which the above conditions are absent or much modified. On account of the fact that severe intraperitoneal mischief may be caused by a bullet which does not actually enter the peritoneal cavity, the track of the missile is the least important point in decision between operation and observation, except in those obviously slight cases where the muscular and fascial strata are not involved.

If the patient has a fairly strong pulse below 95, is not vomiting, does not show signs of hæmorrhage, can hold his breath for over five seconds without severe pain, permits pressure on all parts of the abdomen except in the immediate vicinity of the wound, and can raise his head voluntarily from the pillow without much discomfort, such a patient is better observed for a few hours, with instructions to the nursing staff to give nothing by mouth, to take an hourly pulse, and to report at once should the patient vomit after being made warm and comfortable in bed. In all cases of doubt it is advisable to anæsthetise, to excise the wound, and to explore with the fingers. If doubt still remains an exploratory laparotomy should be performed.

In a small number of cases the rigidity and tenderness may be localised to one side or one quadrant of the abdomen, and if the appearance and pulse indicate a serious condition laparotomy should be performed, with the expectation of finding the missile lodged in a solid viscus, usually the liver, or in the neighbourhood of the uncovered portion of the posterior wall of the large bowel, with hæmorrhage between the layers of the mesentery. The urgency of such cases is not as great as in those in which infection and hæmorrhage affect the general peritoneal cavity, but operation is the path of greater safety.

TECHNIQUE OF OPERATION.

As regards the technique of operation here, this differs little from that in the similar operation of civil practice, but there are a few points which seem worthy of note.

1. *Preparation of patient.*—(*a*) As a general rule morphia and atropine are administered hypodermically before operation. We do not usually give saline beforehand, relying on subcutaneous and intravenous injection during and after the operation. It is important to remember that large doses of morphia may have been given before admission to a casualty clearing station. Any dose given by the mouth may be, for all practical purposes, neglected. (*b*) The "iodine" method is used for the preparation of the skin, except in those cases where the wounds involve a large area, when, after anæsthetisation, the patients are prepared with some carbolic preparation, usually lysol. We invariably endeavour to excise completely both the entrance and exit wound, using, of course, a different set of instruments from those employed in the actual laparotomy. In many doubtful cases it is advisable to explore the direction of the wound before proceeding to the operation; this is especially the case in wounds of the flanks. It is impossible to do this thoroughly without an anæsthetic, as almost invariably the wounds of the different layers of the abdominal wall are not directly one above the other. Thus, the wound in the abdominal muscles may be an inch or more distant from the wound in the skin. The best exploratory instrument is undoubtedly the finger, as by gentle manipulation it is usually possible to trace the wound through the soft tissues with great ease. We usually do this exploration with the naked finger, prior to the final washing up and donning of rubber gloves.

2. *Anæsthetic.*—Warm ether is the anæsthetic we now use most frequently. To give this we employ an improvised apparatus made out of a thermos flask and a pair of ordinary kitchen bellows, which are worked by the anæsthetist's foot. This method was first introduced in No. 17 Casualty Clearing Station, and is excellent in every way. We do not employ a second bottle for chloroform, as we do not think the complex apparatus gives any better results than merely dripping chloroform on the mask, if the patient does not readily go under with ether. It is interesting to note that while still working with an open acetylene flame and chloroform those operating experienced most unpleasant immediate and remote symptoms, the immediate symptoms being coughing and vomiting, the remote being those of anæmia. This we afterwards discovered was due to the fact that "'phosgene' gas" was generated by the combination of the two gases burning. Since the introduction of electric light to our casualty clearing station this difficulty has disappeared.

3. *Time of operation.*—Patients are operated on as quickly as possible; this works out in actual practice at about half an hour after admission. In our opinion it is wrong to wait, no matter how bad the patient may appear, as so often in such cases hæmorrhage and infection are certainly progressing. Many patients have been admitted here with abdomen distended and dull all over; in such cases, on opening the abdomen, the blood spouts out as if the vena cava had been cut. In one such case, in which subsequently recovery took place, the iliac vein was actually severed.

4. *Incision.*—In our experience it is usually better to open the abdomen either in or near the middle line. This incision undoubtedly gives much freer access to the abdomen than any other, and in abdominal wounds one must be prepared for injury to almost any organ contained in the cavity. In one case the wound was in the right lumbar region, and the only intraperitoneal injury found was a perforation of a loop of small intestine in the left iliac fossa, this being one example of many. In such cases it is remarkable how seldom the missile is found and how little harm seems to result from its being left *in situ* (*vide* Case 33).

5. *Intraperitoneal technique.*—The wounds in the gut are sewn up with fine thread in two layers; while stitching up continuous tension on the mesentery should be carefully avoided. End-to-end anastomosis is the usual method employed when resection is necessary, except in those cases where several feet of gut have to be removed, when lateral anastomosis is employed, as this is undoubtedly stronger, and in these cases there is considerable tension at the site of anastomosis. Regarding the question of suture *v.* resection, many cases are obviously only suited for the latter, and this, of course, is quicker than the suture of, say, 10 or 12 perforations. It must, however, be remembered that the area of gut surrounding the perforations seems to suffer little harm and is perfectly viable in the great majority of cases. This is more fully dealt with in the section of this article headed "Pathology." Suture in the transverse axis is preferable to the longitudinal, as the latter will undoubtedly decrease the calibre of the bowel, but too much stress need not be laid upon this, as the gut has great powers of expansion, and speed in stitching seems much more important. The above applies only to lesions of the small intestine. Those of the colon present rather a different picture, as in this case the tissues surrounding the injury are much more affected and show a distinct tendency towards secondary infection and sloughing. In many such cases it is possible to excise a wedge-shaped portion of gut and then suture; in others a colostomy would seem advisable, rather than the risk of a subsequent perforation. In many cases hæmorrhage is present to an enormous extent, and the mere evacuation of blood often leads to a great improvement in the symptoms. (This was most marked in Case 30.) In these cases the bleeding point is very seldom found, and the blood often wells through the wound in the parietal peritoneum. This is especially the case in wounds having their entrance in the lumbar region posteriorly. Wounds of the liver are usually packed; occasionally it is possible to suture them (*vide* Cases 12 and 28). Wounds in the spleen are similarly dealt with. We have not met with many wounds of the kidney; in those cases where the kidney is badly pulped, complete removal is, of course, indicated; in those where the wound is slight the kidney may apparently be left without much danger, and urinary fistulæ usually heal up quite well. The gut is carefully washed with saline while outside the abdominal wound, and all fæcal material and doubtful lymph gently sponged off. The abdominal cavity is also thoroughly washed out with saline or eusol and mopped dry. Some cases seem to benefit from a quantity of saline being left in the peritoneal cavity. In grossly infected cases we have also tried the injection of ether into the peritoneal cavity. In our opinion the shock produced does

not warrant a continuance of this procedure, although it has given good results in our hands in cases where the infection has been localised, as in appendix cases. Large drainage-tubes are inserted into the pelvis, and the flanks as well if the cavity is badly infected.

6. *Closure of the wound.*—The abdominal wound is stitched in layers, some silkworm-gut sutures being inserted through all coverings except the peritoneum. This we think better than complete through-and-through suture, which we have also used.

7. *Miscellaneous.*—During the operation continuous saline is given by means of Lane's bags, and frequently an intravenous infusion is given in addition. We have also tried the citrate method of blood transfusion, but no satisfactory data have yet been obtained. The operating table, although made specially for use in the field, is capable of being used with the patient in the Trendelenburg position.

AFTER-TREATMENT AND SEQUELÆ.

The first and most important symptoms to treat after operation are those of *collapse*, and it is necessary in the great majority of cases to have the foot of the bed raised for several hours. When the pulse becomes stronger the head end is raised on two blocks for some time, and as the patient becomes more conscious the Fowler position is gradually assumed, in which he remains until all danger of sepsis has passed. Small salines per rectum (usually with brandy) are given four-hourly for the first 24 hours. There is no reason why small sips of water or milk and water should not be given by the mouth at once.

Extreme restlessness is common for the first two or three days, and is often so bad as to call for repeated administration of morphia. It usually increases if the patient is not going to get better, and is exceedingly distressing.

In cases where several hours have elapsed between the time of being wounded and the operation, *distension* is frequently present on admission, and in such cases it is advisable to give pituitary extract hypodermically almost immediately after operation. In other cases distension is also common and requires treatment by turpentine enemata, or pituitary extract, followed in half-an-hour by glycerine enema, &c. In our opinion there is no doubt that pituitary extract is the most valuable drug in the after-treatment of abdominal cases. It frequently acts like a charm, a motion of the bowels occurring in from half-an-hour to an hour after injection. Other cases require a glycerine enema to give the desired result. Many patients complain of intense pain following on the administration of pituitary extract; this may often be avoided by giving 1/6 gr. of morphia with the injection; the morphia seems to have little or no effect on the pituitary extract. We invariably use the extract with or without an enema as our first aperient, usually on the third day, this depending on the individual patient. In cases where the large bowel has been sutured, and it is undesirable to increase the bowel contents by aperients such as sulphate of magnesia, we have found a preparation of senna to answer very well. This seems to act by softening the fæcal material without increasing the bulk.

Bronchitis used to be common before the hot ether administration was introduced, and required the usual treatment. We give a mixture of carbonate of ammonia and iodide of potassium if bronchitis does occur.

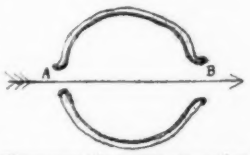
Vomiting and hiccough may require stomach lavage. Many such cases respond to treatment with bicarbonate of soda or small doses of tincture of iodine.

Among the later sequelæ we have observed are *pelvic abscess and suppuration of the original wound and incision.* In grossly infected cases it would seem preferable to use catgut in place of threads, in the suture of the deeper layers of the abdominal wound, as thread, if infected, tends to prolonged suppuration. In cases where the wound is granulating well the skin epithelium may be stimulated by dressings of meat extract, such as Lemco. In Case 11 a large pelvic abscess was evacuated on the eighteenth day, after which the patient made a rapid recovery. In another case what might be called "traumatic insanity" was observed. This case is referred to more fully later. The large pelvic drainage-tube is usually removed at the end of 48 hours, if no indications to the contrary are present. In several cases where the patients have suffered greatly from hunger or thirst, we have allowed "chewing gum" with marked alleviation of distress.

NOTES ON THE PATHOLOGY OF WOUNDS IN THE HOLLOW VISCERA.

Generally speaking, the wounds seem to follow the rule that the exit is larger than the entrance. Thus in Fig. 1, if A be the entrance wound and B the exit, B will be considerably greater than A. This is the case in several post-mortem specimens in our possession. There is, however, a great variation in the appearance of the wounds in the different portions of the intestine, which seems worthy of note.

FIG. 1.

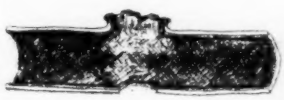


Diagrammatic transverse section of intestine. The exit wound B is considerably larger than the entrance wound A.

Small intestine.—In the small intestine the most marked feature of the wound is the everted mucous membrane giving the characteristic rosette appearance. This is due to contraction of the muscular coats without a corresponding contraction of the mucous and submucous layers. (See Fig 2.)

The above is the commonest type of perforation seen, but in many of our cases the bowel, instead of being merely perforated, was completely torn across in several places. This may occur without other lesion or combined with perforation, and is just as often found in bullet as in shell wounds. The tear does not usually extend into the mesentery, but may do so for a fraction of an inch. The appearance is as in Fig. 3.

FIG. 2.



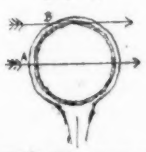
Diagrammatic longitudinal section of intestine showing the everted mucous membrane giving the characteristic rosette appearance.

FIG. 3.

Diagram showing the less common condition of the intestine torn across.

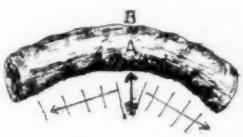
The explanation of the above is not quite clear, and the following points are mentioned as possible factors in its production. (*a*) The bullet in traversing the abdomen sets up lateral waves strong enough to rupture the bowel, the so-called "explosive" force. The fact that in several cases the bullet has caused complete rupture of the bowel without entering the peritoneal cavity would seem to be in favour of this, as do also those cases where several complete splits occur in a few inches of gut. (*b*) If we consider that the small bowel is lying in the abdomen anchored in arcs by the mesentery, it is possible that a bullet, hitting at or near the extreme convexity, may cause instead of a perforation an actual rupture, this effect being produced by the muscular action of the bowel plus the tension of the mesentery. Thus in Figs. 4 and 4A, if a bullet strikes the bowel at A it

FIG. 4.



Diagrammatic transverse section of intestine to show the different possible directions of the force applied. A bullet striking at A will cause perforation, at B a tear.

FIG. 4A.



The same showing the direction of pull of the mesentery.

will cause a perforation; if, however, it strikes at or near B it will cause a complete tear. This is exactly analogous to wounds elsewhere, and has been seen especially frequently in wounds of the external aspect of the thigh. This splitting does not seem to take place in the large intestine, so far as our observation goes. (*c*) Several observers state that the modern rifle bullet, owing to the extreme weight of the base compared with the apex, may acquire a "tumbling" motion, and may therefore strike the bowel at one place with its sharp point and at another with its full length, causing complete rupture.

The paralytic distension of the bowel, so often seen, occurs most frequently in resection cases. This is doubtless due to the fact that in such cases a complete rupture occurs in the continuity of the muscular coats, preventing or hindering the passage of peristalsis, and might be mentioned as a reason for suture rather than resection whenever possible. In many cases it would seem that in addition to the injury to the bowel we have a condition of what might be called "bowel concussion," owing to the shock sustained by the sympathetic nervous system, and this may or may not be recoverable from. Operative measures have been suggested as a remedy for these cases, but in our opinion when distension has occurred to any extent the patient is already in a hopeless condition.

Microscopic appearances. — Captain J. W. McNee, R.A.M.C. (S.R.), has made for us some sections through the everted edge of the perforation. Those show really remarkably little damage to the surrounding tissues, the epithelium being apparently undamaged almost at the extreme edge of the tear. This is in accordance with post-mortem findings, when the portions sutured are always firmly healed.

Large intestine.—Wounds in the large intestine are frequently on the posterior and lateral aspects and are often extraperitoneal, their gravity depending on the ease with which the surrounding devitalised tissues become infected by fæcal material, causing virulent spreading cellulitis. The actual wounds have no marked features, and eversion of the mucous membrane is not usually present. The most marked feature observed by us in large intestinal injuries is the large amount of bruising produced, as evidenced by the collection of blood between the peritoneal and internal walls. There is much more tendency to sloughing than in lesions of the small intestine.

Stomach.—There is nothing of special importance to note regarding wounds of the stomach, except that there seems a distinct tendency towards infiltration and sloughing of the surrounding tissues. In one of our cases the bullet had nicked a large vessel near the edge of the greater curvature, causing profuse hæmatemesis.

RESULTS.

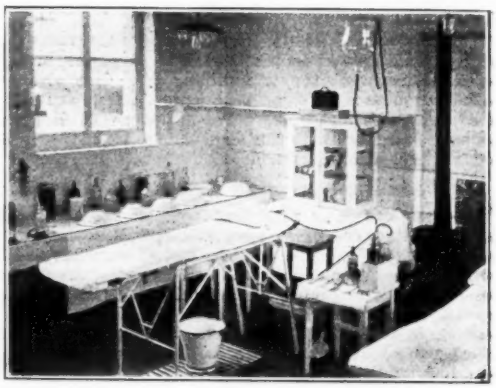
Our results give a recovery rate of 34 per cent. This is low in comparison with a recent splendid series of cases published, and may be accounted for by the fact that we have only kept notes on two cases which showed no intraperitoneal injury and have not included the results of many exploratory laparotomies performed with negative results, which would have completely altered our figures. It is probable, however, that over a larger number of cases of undoubted peritoneal injury the rate will be somewhat higher, as our series undoubtedly contains an undue proportion of cases of very serious injury. This is borne out in an article by Colonel Cuthbert Wallace, C.M.G., and the real recovery rate will probably be between 40 and 50 per cent. In a recent article the writer states that it is not so usual in gunshot wounds of the bowel for the gut to be completely divided; in our experience this is a comparatively common occurrence.

Regarding the question of whether a man will stand operation or not, we take the point of view that, if intraperitoneal perforation of the gut is present he will almost certainly die if not operated on, and that it is right to give him a chance, even though the chance be 1 in 1000. Many of the cases were pulseless on admission; in others the pulse was only felt as a flicker, and yet two at least of this type of case recovered. In the majority of cases it should be considered that we are dealing with young adult males whose physical resistance is at a very high pitch. The cases on which we have considered it undesirable to operate number, so far as we can estimate, only four, and in these cases all the patients died shortly after admission. It must, however, be remembered that, unfortunately, such a point of view is only possible at times when the casualty clearing stations are not unduly pressed. In times of stress it will be obviously quite impossible to operate on every case which appears to have little chance of recovery, as this would mean time and labour spent which might be put to a better use in dealing with less seriously injured patients.

A photograph of part of the operating theatre for abdominal, head, and "clean" cases is reproduced with this article (see illustration). A smaller theatre and a different set of instruments, mackintosh sheets, and aprons are employed for any patient exhibiting signs of gas gangrene.

It would be difficult to estimate the improvement which has taken place in the equipment of a casualty clearing station from the operative and nursing points of view since the early days of the war, when a well-selected but very small outfit sufficed for amputations and cleansing operations, but nothing more elaborate.

FIG. 5.



NOTES ON SPECIAL CASES.

CASE 7.—Practically no abdominal discomfort was experienced by this patient after operation and his wound and incision healed rapidly. On the second day he stated that he had tasted poison in the sips of water given to him. This became a fixed delusion which persisted for five days, and he expressed gratitude each day to the medical officer who did his dressing, and thereby withdrew the poison which his enemies gave him by the mouth.

CASE 11.—This patient, an officer, was so ill on admission that it was open to question whether an operation should be performed at all. He, however, made an excellent recovery from his primary operation, but afterwards developed a large pelvic abscess on the left side which was opened and drained on the eighteenth day. It is interesting to note that before and after his being wounded he consumed quite a considerable quantity of neat rum. The hole in the stomach was roughly the size of a two-shilling piece and the abdominal cavity contained a large quantity of stomach contents.

CASE 28.—The bullet in this case had not entered the peritoneal cavity; the track could be traced on the examination of the parietal peritoneum as a line of bruising. So great, however, had the lateral force been that there was a crack in the anterior wall of the liver, almost severing a triangular portion of the organ, and there was also a rent in the gastro-colic omentum.

CASE 29.—This patient was kept at a clearing station for two months. During that period he did not show the slightest sign of partial obstruction or paresis of the bowel in spite of his serious operation. On the fourth day a large quantity of streptococcal pus welled out of the wound in the left buttock. On the eighth day he developed pneumonia of the right lower lobe and was critically ill for 13 days. His temperature then fell to normal, where it remained for two days. It then rose suddenly to 103° F. and he complained of severe pain in the right buttock. On the third day after this rise a swelling of the right buttock became evident and under an anæsthetic 11 ounces of pure streptococcal pus were evacuated. The patient improved considerably, but the suppuration of the original wound of entrance continued. A fortnight later this wound was explored under an anæsthetic and a few small fragments of the perforated iliac bone were removed. An autogenous vaccine was then prepared and the temperature and general condition markedly improved. When he left his temperature was steadily falling and he was eating, sleeping, and feeling well.

CASE 30.—This is an excellent example of pure intraperitoneal hæmorrhage. The patient on admission was extremely ill with a pulse of 120, which was scarcely palpable. He was vomiting continuously; the abdomen was greatly distended and dull almost all over. On opening the peritoneal cavity dark fluid blood spurted out, as if a large vessel had been opened by the scalpel. No bleeding point was found and no intestinal or other injury. After operation the pulse dropped in 12 hours to 80 and the patient was transferred to the base on the sixth day for thorough

SYNOPSIS OF CASES.

No.	Description of wound and missile.	Lesions found.	Treatment.	A = result. B = time between wound and operation.	Cause of death.
1	Multiple shrapnel wounds of anterior abdominal wall.	Abdomen full of blood and bowel contents. Two large perforations of small intestine.	Suture of perforation. Abdominal lavage and pelvic drainage.	A. Died in 3 days. B. 5 hours.	General peritonitis. Necropsy.
2	Entrance wound through right ilium. Exit 2 in. below and to left of umbilicus.	1. Abdomen full of blood and fæcal material. 2. Two perforations of cæcum. 3. Several perforations of ileum.	Suture of all perforations. Large pelvic drainage-tube.	A. Died in 3 days. B. 8 hours.	General peritonitis. Necropsy.
3	Entrance 1 in. below and to right of umbilicus. No exit. Bullet.	Two small perforations of ileum.	Suture of perforations. Drainage-tube in right flank.	A. Recovery. B. 2½ hours.	—
4	Entrance 2 in. to the right of and above umbilicus. Bullet.	1. Abdomen full of blood. 2. Eight perforations of ileum and several perforations of mesentery. 3. Two perforations of sigmoid flexure.	Resection of 3½ ft. of ileum (lateral anastomosis). Suture of sigmoid. Pelvic drainage.	A. Recovery. B. 4½ hours.	—
5	Entrance in left lumbar region. Exit wound in right iliac region. Protrusion of bowel from exit wound. Shell fragment.	1. Gut completely severed at ileo-cæcal junction. 2. Multiple perforations of ileum in 2 ft. immediately above cæcum.	Resection of 2 ft. of ileum. Suture of cæcum. Anastomosis of ileum and sigmoid.	A. Died in 2 hours. B. 3 hours.	Hæmorrhage and shock. No necropsy.
6	Entrance left buttock. Exit wound just below umbilicus. Bullet.	1. Three perforations of ileum. 2. Perforation of bladder.	Suture of perforation of intestine; suprapubic cystotomy.	A. Died in 48 hours. B. 4 hours.	Hæmorrhage and shock. No necropsy.
7	Entrance right buttock. Exit 3 in. below to left of umbilicus. Shell fragment.	Eight perforations in small intestine. One perforation in cæcum; iliac vein torn; large intraperitoneal hæmorrhage.	Resection and suture. Lateral anastomosis.	A. Recovery. B. 7½ hours.	—
8	Entrance 1 in. above and to left of umbilicus. Exit right hip. Bullet.	Six perforations in small intestine; large retroperitoneal hæmorrhage.	Suture of perforations.	A. Died in 36 hours. B. 3½ hours.	Shock and hæmorrhage. No necropsy.
9	Entrance below and to right of umbilicus. No exit. A loop of torn bowel protruding. Bullet.	Five perforations of jejunum; 1 ft. of lower part of ileum blown to pieces; perforation of bladder.	Resection and suture.	A. Died in 4 hours. B. 4 hours.	Operation performed only because extruded bowel was being strangulated. Patient never rallied.
10	Entrance 1 in. below twelfth rib in right mid-axillary line. No exit. Bullet.	Abdomen full of blood and fæcal material; large tear in colon at hepatic flexure; extensive retroperitoneal hæmorrhage.	Suture of tear in colon.	A. Died in 36 hours. B. 3½ hours.	Necropsy. Bullet found in twelfth dorsal vertebra with point actually in spinal canal. Fracture of twelfth rib.
11	Missile had passed through right upper arm into abdomen in right clavicular line at level of eighth rib and lay under skin in left hypochondriac region. Shrapnel bullet.	Rupture of liver; large rent in anterior wall of stomach; tear in gastro-colic omentum with bleeding vessels.	Suture of stomach. Liver packed. Bleeding vessels tied.	A. Recovery after second operation for pelvic abscess. B. 5 hours.	—
12	Transverse laceration in epigastric region. Protrusion of portion of stomach and transverse colon. Portion of high-explosive shell.	Laceration of liver, a portion of the anterior border being almost completely severed.	Removal of loose portion of liver. Catgut suture of liver. Suture of wound. Abdominal drainage.	A. Recovery. B. 6 hours.	—
13	Transverse laceration of abdominal wall, 8 in. long, in epigastric region. Protrusion of stomach, transverse colon, and large portion of great omentum. Portion of high-explosive shell.	Large portion of great omentum ingrained with mud and portions of stone. This was gangrenous.	Portion of lacerated omentum removed. Edges of the wound pared. Large drainage-tube inserted.	A. Recovery. B. 24 hours.	—
14	Entrance below costal margin in the region of the gall-bladder. Exit right lumbar region just below twelfth rib. Exit wound large and (?) injury to vertebræ. Bullet.	Abdomen full of blood. Localised peritonitis round large stellate rupture of under surface of liver.	Liver packed. Abdomen washed out and drained.	A. Died in 10 hours. B. 30 hours.	Necropsy. A very large retroperitoneal hæmorrhage. Large amount of blood clot in abdominal cavity. Fracture of twelfth rib and vertebræ. Patient had only one kidney (enormously enlarged).
15	Entrance between fifth and sixth ribs 1 in. to right of sternum. No exit. Bullet.	Ruptured liver; one perforation transverse colon; one in jejunum; one in cæcum.	Suture of perforations. Liver packed.	A. Died in 6 hours. B. 4½ hours.	No necropsy. Death from shock and hæmorrhage.
16	Entrance anterior abdominal wall on level with umbilicus in mid-clavicular line. No exit. Shell fragment.	Twenty perforations small intestine. Mesentery torn in two places.	Suture of one perforation of ileum and one of pelvic colon. Double resection and one end-to-end and one lateral anastomosis.	A. Died in 12 hours. B. 6 hours.	No necropsy. Shock and hæmorrhage.
17	Entrance upper portion hypogastric region left side (large and lacerated). No exit. Shell fragment.	Numerous perforations and complete tears in small intestine. Abdomen full of blood.	Resection of 4 ft. of small intestine. Lateral anastomosis.	A. Died. B. 16 hours.	Shock and hæmorrhage. No necropsy.
18	Entrance over ninth rib in left posterior axillary line. No exit. Bullet.	Abdomen full of blood. Laceration spleen and liver; two tears in stomach and a long tear in transverse colon.	Suture of tears in stomach and colon. Liver and spleen packed.	A. Died in 6 hours. B. 6½ hours.	Necropsy. Left pleural cavity full of blood. Bullet lying just below external surface of right lobe of liver.
19	Entrance right costal margin near mid-Poupart plane. Another wound (?) penetrated apex of right lung. Shrapnel.	Tip of gall-bladder cut off; transverse colon bruised; one perforation of jejunum.	Gall-bladder sutured; also perforation in jejunum. Bruised portion of colon invaginated. Chest wound examined and found penetrating.	A. Died in 24 hours after profuse hæmoptysis. B. 5½ hours.	Principally lung condition.
20	Entrance left posterior lumbar region over eleventh rib; exit right hypochondriac region. Bullet.	Abdominal cavity full of blood. Large stellate crack on under surface of liver bleeding freely.	Liver packed.	A. Died a few hours after operation. B. 13 hours.	Chiefly hæmorrhage. Bullet had traversed the body of the dorsal vertebra. No necropsy.

SYNOPSIS OF CASES—*(Continued)*.

No.	Description of wound and missile.	Lesions found.	Treatment.	A = result. B = time between wound and operation.	Cause of death.
21	Entrance right hip. Bullet lay under the skin below left iliac crest.	Blood in urine on passing catheter. Abdominal cavity full of blood. Small loop of intestine in pelvis blown to pieces. Several other perforations. No injury to bladder found.	Resection; end-to-end anastomosis.	A. Died. B. 15 hours.	Shock and hæmorrhage.
22	Five wounds in left posterior lumbar region; shell fragments.	Five perforations small intestines. Small portion of shell embedded in bowel wall.	Suture of perforations.	A. Recovery. B. 18 hours.	—
23	Entrance left lumbar region, on level with umbilicus. Exit low down right lumbar region. Bullet.	Four tears in transverse colon; two in jejunum; one in cæcum.	Suture of perforations.	A. Recovery. B. 5 hours.	—
24	Entrance inner side of left anterior superior spine. Exit left buttock. Bullet.	Large intraperitoneal hæmorrhage. No intestinal injury found.	Pelvic drainage.	A. Recovery. B. 6 hours.	—
25	Particulars of wound not kept. Bullet.	Multiple complete tears of small intestine. Several isolated perforations.	Resection of 18 in. small intestine. Suture of perforations.	A. Recovery, but had a fæcal fistula. B. ?	—
26	Ragged tear in right lumbar region. Shell fragment.	Abdomen full of blood. Extensive bruising of colon at hepatic flexure. Spouting artery in mesentery.	Spouting vessel tied. Pelvic drainage.	A. Recovery, but had a fæcal fistula. B. 6 hours.	—
27	Ragged wound above right iliac crest. Partial paralysis right leg. Bullet (ricochet).	Some hæmorrhage in abdominal cavity. Large retroperitoneal hæmorrhage and extensive bruising of cæcum.	Abdomen washed out and stitched up.	A. Died in 12 days. B. 5½ hours.	Necropsy: Two large rents in posterior aspect of ascending colon. Extensive cellulitis; septic broncho-pneumonia both lungs. Several lumbar nerves cut.
28	Entrance right epigastric region. Exit left hypochondriac region. Bullet.	Split 2½ in. long anterior border of liver. Rent in gastro-colic omentum. Several vessels spouting. Bullet had not entered peritoneal cavity.	Liver stitched. Bleeding vessels ligatured.	A. Recovery. B. 4½ hours.	—
29	Entrance left buttock. Shrapnel bullet lying under skin, above right anterior to superior spine. Shrapnel bullet.	19 perforations of small intestine. Generalised peritonitis. Large quantity of blood in abdomen. Retroperitoneal hæmatoma.	Double resection and end-to-end anastomosis.	A. To base. Suppuration of entrance wound persisting. B. 4½ hours.	—
30	Entrance right posterior iliac region. No exit. Shrapnel bullet.	Peritoneum full of dark blood. No injury to hollow viscera found.	Pelvic drainage.	A. Recovery. B. 3 hours.	—
31	Entrance left buttock. Exit right hypogastric region. Knuckle of bowel protruding. Bullet.	Abdomen full of blood. Multiple perforations and ruptures of small intestines.	Double resection and suture.	A. Died in 2 hours. B. 7½ hours.	Shock and hæmorrhage. No necropsy.
32	Entrance right buttock. No exit. Large swelling in region of right inguinal canal. Shell fragment.	Large fragment of shell in congenital hernia sac; six large perforations in ileum near junction with cæcum; laceration of cæcum and appendix.	Resection, end-to-end anastomosis. Appendix removed. Cæcum sutured.	A. Died in 24 hours. B. 6 hours.	Shock and hæmorrhage. Iliac bone badly shattered.
33	Entrance 2 in. below ninth costal cartilage. Bullet.	Small perforation near edge of greater curvature of stomach; Large vessel spouting.	Purse-string suture round stomach perforation. Bullet afterwards removed from liver.	A. Recovery. B. 14 hours.	—
34	Entrance high up in right hypochondrium. Bullet lying under skin on right side between tenth and eleventh ribs behind.	Small quantity of blood in peritoneum. Bullet passed through liver.	Drainage of peritoneum.	A. Recovery. B. 3 hours.	—
35	Entrance anterior abdominal wall right hypochondrium. Exit posterior abdominal wall close to left side third lumbar vertebra. Revolver bullet.	Two tears in transverse colon; two perforations of duodenum.	Suture of all perforations. Pelvic drainage.	A. Died in 3 days. B. 2 hours.	Necropsy: Localised peritonitis. Large retroperitoneal hæmorrhage.
36	Entrance right umbilical region. Exit right lumbar region. Bullet.	Abdomen contained blood and intestinal contents; two complete ruptures of small intestine.	Resection of 1 foot of intestine; end-to-end anastomosis.	A. Died in 3 days. B. 10 hours.	General peritonitis. Necropsy.
37	Entrance right umbilical region. No exit. Shell fragment.	Small knuckle of intestine protruding; 14 perforations and ruptures of ileum.	Resection of 4 ft. of bowel; end-to-end anastomosis.	A. Died in 1½ hours. B. 4½ hours.	Shock and hæmorrhage. No necropsy.
38	Entrance McBurney's point. Exit right buttock. Bullet.	Severe bruising of cæcum. Large retroperitoneal hæmorrhage. No intestinal perforations found.	Drainage of right iliac fossa.	A. Died in 48 hours. B. 5 hours.	General peritonitis. Portion of cæcum had sloughed, causing fæcal fistula. Small ulcer in upper part of ileum.
39	Entrance left buttock. Exit left iliac region. Shell fragment.	Two large tears in sigmoid; four rents small intestine; fracture of pelvis.	Resection of 2 feet of small intestine. Suture of sigmoid. Pelvic drainage.	A. Died in 4 days, suddenly. B. 10 hours.	Necropsy: Localised peritonitis. Heart dilated and flabby. Extensive mitral disease.
40	Entrance posterior abdominal wall over twelfth rib on left side. No exit. Shell fragment.	Two large rents in descending colon; one rent in jejunum; large shell fragment lying on the aorta behind peritoneum.	Suture of jejunum. Colostomy. Pelvic drainage.	A. Died in 5 days. B. 11 hours	General peritonitis. Necropsy.
41	Entrance anterior abdominal wall left lumbar region. Missile lying below twelfth rib left side. Also wound of chest, ? penetrating. Shell fragments.	Protrusion of knuckle of bowel from entrance wound. Ileum torn in two places.	Suture of perforations. Pelvic and flank drainage. Missile excised.	A. Died in 3 days. B. 4 hours.	Necropsy. Slight localised peritonitis left iliac fossa. Portion of shell in right lung. Hæmothorax.

SYNOPSIS OF CASES—*(Continued)*.

No.	Description of wound and missile.	Lesions found.	Treatment.	A = result. B = time between wound and operation.	Cause of death.
42	Entrance posterior abdominal wall, left lumbar region. Exit anterior abdominal wall left lumbar region. Also bullet wound of right arm.	Abdomen full of blood; two large tears in sigmoid; severe bruising round tears. Solid fæcal matter lying free in pelvis.	V-shaped resection of affected portion of sigmoid.	A. Recovery. B. 5 hours.	—
43	Entrance posterior abdominal wall, right lumbar region. Shell fragment.	Missile had penetrated back of hepatic flexure. Two perforations of ileum in a loop lying in left iliac fossa.	Perforation sutured. Left iliac fossa drained.	A. Died in 8 days, having developed fæcal fistula and severe diarrhœa. B. 28 hours.	Necropsy. Slight adhesive peritonitis. Right lobar pneumonia.
44	Entrance costal margin, left epigastric area. Exit right loin. Bullet (shrapnel).	Rupture of liver. Wound through right kidney. Abdomen full of red blood.	Liver and kidney packed with gauze.	A. Died in 3 days, after removal of packing. B. 4 hours.	Secondary hæmorrhage. Necropsy. Abdomen contained large blood clots. Complete transverse splitting of right kidney.
45	Entrance right posterior lumbar region. Bullet lying under skin in left umbilical area. Shrapnel.	One perforation of jejunum, three of ileum and three in cæcum, and two in transverse colon.	All perforations sutured. Shrapnel bullet removed.	A. Died in 30 hours. B. 5½ hours.	Necropsy. General peritonitis. Large retroperitoneal hæmorrhage. Old adherent pericarditis.
46	Entrance right buttock. Exit left umbilical region. Bullet.	Abdomen full of blood; 11 perforations and tears of ileum; one perforation of cæcum. Cæcum badly bruised. Severe bruising of transverse colon.	Resection of portion of small intestine. Suture of cæcum. Pelvic drainage.	A. Died in 24 hours. B. 5 hours.	Necropsy. Large portion of anterior wall of transverse colon had sloughed. Abdomen full of fæcal material.
47	Entrance left buttock. Exit left iliac region. Shell fragment.	Large intraperitoneal hæmorrhage. Comminuted fracture of left iliac bone.	Drainage.	A. Died in 12 hours. B. ?	Shock and hæmorrhage. No necropsy.
48	Entrance posterior abdominal wall left lumbar region. No exit. Shell fragment. Multiple wounds of face, arms, and legs.	Protrusion of small piece of omentum from wound. No intestinal injury. Hæmatoma in mesentery. Omentum torn and bleeding.	Vessels in omentum ligatured.	A. Died in 36 hours. B. 5½ hours.	No necropsy. Shock and hæmorrhage.
49	Entrance posterior dorsal region, over tenth rib. No exit. Shell fragment.	Abdomen full of blood. Missile had passed through liver and was lying in anterior abdominal wall.	Liver packed with gauze.	A. Died in 12 hours. B. 4½ hours.	No necropsy. Hæmorrhage.
50	Entrance wound in umbilical area. No exit. Shell fragment.	Abdomen full of blood and fæcal matter. Large tear in transverse colon and cæcum; two tears in small intestine. Extensive bruising of cæcum.	Suture of transverse colon and small intestine. Artificial anus at cæcum.	A. Died in 3½ hours. B. 5½ hours.	Shock and hæmorrhage. No necropsy.

X ray examination. He was then exceedingly well. A subsequent report from the base stated that the patient made an excellent recovery and that no further X ray examination was considered necessary.

CASE 33.—This patient was admitted with a small wound in the epigastric area which did not seem to perforate. In a few hours, however, he vomited a large quantity of bright red blood and became so ill that immediate operation was decided on. On opening the abdominal cavity nothing at first was found until a thorough examination of the anterior wall of the stomach revealed a tiny puncture near the edge of the greater curvature, which just admitted the point of a probe. A large vessel was partially severed and was pumping its contents into the stomach. No bullet could be found. The patient did perfectly well; the bullet was afterwards located by X rays in the liver and removed by a surgeon at the base.

The following analysis of the foregoing table has been made in order to emphasise certain points of interest in the series of operations:—

Site of the Lesion in the 17 Cases which Recovered.

(*a*) *Wounds of the small intestine alone*—4 cases (3, 22, 25, and 29).

Treatment adopted.—Suture alone in 2 cases (3 and 22). Resection and suture in 1 case (25). Double resection in 1 case (29).

(*b*) *Wounds of the small and large intestine*—3 cases (4, 7, and 23).

Treatment.—Resection of small intestine, suture of large intestine (Case 4). Resection and suture (Case 7). Suture alone (Case 23).

(*c*) *Wounds of the large intestine alone*—1 case (42).

Treatment.—V shaped resection of the sigmoid.

(*d*) *Wounds of the stomach and liver*—2 cases (11 and 33).

Treatment.—Suture of perforation in stomach, liver tear packed (Case 11). Suture of perforation in stomach (Case 33).

(*e*) *Wounds of the liver*—3 cases (12, 28, and 34).

Treatment.—Rent in liver sutured in 2 cases (12 and 28). Drainage of peritoneum only (Case 34).

(*f*) *Intraperitoneal hæmorrhage without injury to a hollow viscus*—3 cases (24, 26, and 30).

Treatment.—Bleeding point in mesentery ligated (Case 26). Drainage of peritoneum, bleeding point not located (Cases 24 and 30).

(*g*) *Wound and prolapse of omentum*—1 case (13).

Treatment.—Excision of the prolapsed portion and wound sutured.

Summary.

Cases that recovered	17
Parts involved:	
Small intestine alone	4
Small and large intestine	3
Large intestine alone	1
Stomach and liver	2
Liver	3
Hæmorrhage without perforation of intestine	3
Wound of omentum	1
Total	17

A fæcal fistula occurred in 3 cases: (1) Small gut (Case 25), recovered; (2) colon (Case 26), recovered; (3) colon (Case 43), died. Sloughing of the colon in 1 case (46); died. Secondary operation for localised abscess: 1 case (11); recovery. Perforation of the bladder with wounds of the intestine: 2 cases (6 and 9); both fatal.

Site of the Lesions of the 33 Fatal Cases.

1. *Wounds of the small gut alone*—10 cases. In 6 of these extensive intraperitoneal hæmorrhage was present.

2. *Wounds of the small and large intestine*—9 cases as follows: Small gut and cæcum, 2; small gut, cæcum, and transverse colon, 3; small gut and sigmoid, 1; small gut and transverse colon, 1; small gut and descending colon, 1; and small gut and hepatic flexure, 1. In 6 free hæmorrhages had occurred.

3. *Wounds of the large intestine alone*—3 cases: hepatic flexure, ascending colon, and cæcum.

4. *Wounds of the bladder and small intestine*—2 cases.

5. *Wounds of the liver alone*—3 cases.

6. *Wounds of the liver associated with other viscera*—4 cases: Liver plus small plus large intestine, 1; liver, spleen, stomach, and transverse colon, 1; liver, transverse colon, and jejunum, 1; liver and kidney, 1.

One case of injury to the omentum and one of fracture of the pelvis with intraperitoneal hæmorrhage bring the total of fatal cases to 33.

The cause of death in the 33 fatal cases was found to be as follows: 1 General peritonitis—10 cases. The average time of survival after operation was 3½ days. 2. Hæmorrhage and shock—19 cases. Time of survival varied from 2 to 48 hours after the operation. 3. Lung conditions—2 cases:

(*a*) hæmoptysis, and (*b*) broncho-pneumonia and cellulitis. 4. Secondary hæmorrhage (kidney)—1 case. 5. Sloughing of the gut—1 case.

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ON THE ADVANTAGE OF USING A BROTH CONTAINING TRYPSIN IN MAKING BLOOD CULTURES.

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IT is now generally recognised that at times very important information may be gained by making cultures from a sample of blood drawn from a vein, for by this simple procedure it is often possible to make a definite diagnosis, especially in cases of obscure fevers. There is little doubt that this method of investigation would be much more frequently adopted if positive results could be obtained in a larger percentage of cases, and if the presence or absence of growth could be more rapidly determined. Even if living microbes are present in the sample of blood obtained from the vein it is quite possible that no growth will be detected in the cultures made from it, or the growth will be so delayed that for several days it will be unrecognised either by direct examination or by subculture.

The following factors are certainly of importance as causes of some of the failure and much of the delay.

1. When blood is added to broth clotting soon takes place and the fibrin meshwork formed catches up any microbes—as has been demonstrated by Jousset—together with the cellular elements of the blood. The fibrin contracting, a firm mass is formed which usually sinks to the bottom of the tube. If, as is generally the case, only very few micro-organisms are present it is more than probable that, even if these organisms multiply in the clot, growth would appear in the surrounding broth only after a considerable interval.

2. Wright's recent researches have shown that the leucocytes are capable of wandering through the fibrin meshwork forming the clot and are frequently attracted towards any microbes present, which they attack and often kill; so that there is present in such clots a condition favourable to killing off any microbes that may be present.

3. Again it is very generally recognised that the blood fluids are antibacterial, thus, in respect of certain organisms the serum has very considerable bactericidal properties, and almost every organism is affected by the opsonic properties of the serum and rendered by it more easily taken up by the leucocytes. These properties of the blood fluids may play an important rôle in preventing the rapid growth of organisms in blood cultures.

4. Another property which belongs to the blood fluids is that of *inhibiting* the growth of microbes, although they may not be actually bactericidal. This property largely depends on the concentration of the serum and differs markedly in individuals, being often very marked in the infected.

From time to time recommendations have been made to improve the technique of blood cultures, it having been stated that by this or that procedure a larger percentage of successes, or quicker results, were obtained. When these methods have proved successful it is always found that the three factors mentioned above—namely, the formation of a firm clot, the bactericidal action of the blood, or the inhibitory action of the serum—have to some degree been modified. For instance, it has been recommended that a large quantity of broth should be used, and that only a small quantity of blood should be added to each flask, and this simple device, by lessening the antibacterial action of the blood, is certainly attended with considerable success. Again, special media have been advocated—for instance, the employment of bile as a medium in making the blood cultures for the diagnosis of typhoid fever and allied infections. By this method it has become possible to be certain of obtaining a positive result within 36 or 48 hours in all cases in which the blood culture is made during the early stages of the disease. Let it be here noted that the bile prevents the blood from clotting and completely abolishes all the bacteriotropic actions of the serum. Bile as a medium is only of use, however, when the organisms to be cultivated belong to the typhoid-coli group, which flourish on its constituents; it is strongly antagonistic to the growth, or even the life, of most other organisms.

Considering these various facts, it appeared that before discovering an ideal medium in which to make blood cultures it was necessary to find some substance which (1) prevented the clotting of the blood; (2) destroyed the bactericidal action of the serum and the activities of the leucocytes; (3) destroyed the inhibitory power of the blood fluids with regard to the growth of the organisms; and (4) which favoured, or at any rate did not hinder, the growth of the pathogenic organisms. The possibility that trypsin was such a substance was suggested by certain experiments recently reported and which are here outlined. While making researches on the treatment of suppurating wounds Wright found that when the antitryptic power of the serum present in the wound was neutralised by the trypsin set free by the breaking down of the leucocytes of the pus, many organisms grew luxuriantly which were quite incapable of multiplying when the wound contained a serum rich in antitryptic power.[1] Emery, continuing these investigations, showed that by neutralising the antitryptic power of the serum with trypsin the bactericidal action and other bacteriotropic properties of the serum were destroyed. From the same laboratory came the fact that when sufficient trypsin was added to the blood to neutralise the antitryptic power of the blood fluids no clotting took place.

It was therefore determined to carry out a series of experiments in order to confirm these results and at the same time to plan the experiments in such a way that the results obtained would show if a broth containing trypsin would be suitable for use in making blood cultures. The trypsin used throughout these experiments was the compound solution of trypsin of Messrs. Allen and Hanburys,[2] as it has been found that this solution is very constant in strength. Further, in respect of its sterility, this preparation may generally be relied upon, although it is advisable to test samples from time to time. One contaminated batch has been met with in the course of these experiments, but careful testing of more than ten other batches, both aerobically and anaerobically has given no growth of organisms. By means of a series of experiments it was shown that a volume of this trypsin diluted 1 in 30 was capable of preventing an equal volume of blood from clotting, and also completely destroyed the bactericidal action of the blood. The details of one of these experiments are here given to demonstrate the method used and the results obtained, which were very constant.

A typhoid broth culture 24 hours old was diluted 1 in 1 million times, and 10 c.mm. of this dilution were planted out on to the surface of agar slopes. Tubes 1 and 2 gave 7 colonies and 11 colonies respectively, which gives an average of 9 colonies in 10 c.mm. of 1 in 1 million dilution of the culture.

10 c.mm. of 1 in 1 million dilution of the culture were then mixed with 10 c.mm. of blood on a sterile slide, and after a few seconds 10 c.mm. of a dilution of trypsin were added and the whole thoroughly mixed. This mixture was then drawn up into the capillary portion of a Wright's bactericidal tube, the reservoir of which had been previously filled with sterile broth. After the tube had been incubated for four hours at 37° C. the contents of the capillary portion were drawn up into the broth-filled reservoir, a note being made as to whether clotting had occurred in the mixture. The tubes were again incubated for 24 hours and then examined for presence of growth. (Table I.)

Further experiments were carried out to find the effect of various dilutions of trypsin on the clotting time of the blood. The result obtained was that a dilution of trypsin of about 1 in 30 completely inhibited the clotting power, whereas

[1] THE LANCET, Oct. 30th, 1915, p. 959.
[2] Not "Liquor Trypsin Co."

weaker dilutions had the effect of making the blood clot very much more rapidly.

TABLE I.

No. of tube.	Dilution of trypsin.	Result as regards clotting.	Result as regards growth.
1	1 in 5	No clot.	Growth.
2	1 ,, 10	,,	,,
3	1 ,, 20	,,	,,
4	1 ,, 30	,,	,,
5	1 ,, 40	Clot.	No growth.
6	1 ,, 50	,,	,,
7	1 ,, 75	,,	,,
8	1 ,, 100	,,	,,
Broth control.	None.	,,	,,

The method used to demonstrate these facts was to fill in a series of capillary tubes with equal volumes of blood and the dilution of trypsin solution, controls with salt solution in place of trypsin being also put up. When drawing up these mixtures into the tubes a few bubbles small enough to move freely in the bore were introduced. By tilting the tube the moment of clotting could be easily ascertained from the fixation of these air bubbles, and this conclusion was then confirmed by blowing out the contents of the tube into a vessel of water. The experiments were carried out at room temperature. An example is given in Table II.

TABLE II.

Contents of tube.	Time of clotting.
1 vol. blood and 1 vol. salt solution.	4 minutes 50 seconds.
1 ,, ,, 1 ,, 1 in 200 dilution of trypsin	3 ,, 25 ,,
1 ,, ,, 1 ,, 1 ,, 150 ,, ,,	2 ,, 0 ,,
1 ,, ,, 1 ,, 1 ,, 100 ,, ,,	2 ,, 25 ,,
1 ,, ,, 1 ,, 1 ,, 40 ,, ,,	3 ,, 30 ,,
1 ,, ,, 1 ,, 1 ,, 20 ,, ,,	Clotting completely inhibited.

The next point to be investigated was the effect of trypsin on the opsonic power of the serum, and it was again found from experiments similar to that given in detail below that strengths of about 1 in 30 were necessary to inhibit this bacteriotropic property of an equal quantity of serum.

The method used was as follows. A series of tubes were filled in with a mixture made by taking 1 volume of washed corpuscles, 1 volume of serum, 1 volume of staphylococcus emulsion, and 1 volume of trypsin solution, or, in the case of the control, 1 volume of salt solution. These tubes were then incubated for 15 minutes, after which films were made, stained with carbol-thionin, and the average number of staphylococci per leucocyte estimated. The results obtained in one such experiment are given in Table III.

TABLE III.

Tube 1.—Control: 1 vol. corpuscles, 1 vol. serum, 1 vol. staphylococcus emulsion, and 1 vol. normal salt solution	= 3·03 cocci per cell.
,, 2.—1 vol. 1 in 200 trypsin solution	= 3·80 ,, ,,
,, 3.—1 ,, 1 ,, 100 ,, ,, ...	= 3·40 ,, ,,
,, 4.—1 ,, 1 ,, 60 ,, ,, ...	= 4·00 ,, ,,
,, 5.—1 ,, 1 ,, 40 ,, ,, ...	= 3·30 ,, ,,
,, 6.—1 ,, 1 ,, 30 ,, ,, ...	= 1·85 ,, ,,
,, 7.—1 ,, 1 ,, 20 ,, ,, ...	= 0·10 ,, ,,

It may be here noted that the antitryptic power of normal serum is just neutralised, or very nearly neutralised, by an equal volume of a 1 in 30 dilution of the trypsin used.

Further experiments were carried out to ascertain whether solutions of trypsin destroyed the power of the serum to inhibit the growth of organisms, and it was found that in sufficient strength trypsin totally removed this property of the serum.

The method used to demonstrate this was to take, in the one case, a quantity of fresh, warmed serum, and in the other a similar quantity of warm serum to which 5 per cent. of a trypsin solution had been added, implant each of these with a small (and equal) number of streptococci, and then add sufficient concentrated agar solution to convert the mixture into a jelly on cooling. After this mixture had set it was incubated at 37° C., and the number of colonies were counted at intervals. The details of one such experiment are here given.

Tube 1.—700 c.mm. of fresh serum were mixed with 10 c.mm. of 1 in 100,000 dilution of a 24-hour-old broth culture of streptococcus pyogenes, and warmed to about 45° C. in a water bath.

Tube 2.—35 c.mm. of trypsin solution were added to 665 c.mm. of fresh serum, and with this were mixed 10 c.mm. of 1 in 100,000 dilution of the streptococcus used in Tube 1, this mixture being also warmed to 45° C.

Tube 3.—700 c.mm. of broth were mixed with 10 c.mm. of the streptococcus culture.

To each of these tubes were then added 100 c.mm. of a 4 per cent. solution of agar in normal saline which had been melted and cooled to 47° C. The tubes were now rapidly cooled to make their contents set, and afterwards incubated at 37° C. (Table IV.)

TABLE IV.

	Number of colonies after 14 hours.	Number of colonies after 22 hours.
Tube 1. Serum only	2*	19
Tube 2. Serum and trypsin	28	30
Tube 3. Broth	22	22

* Very minute.

The result of all these experiments, which confirmed and amplified the findings of Wright and his fellow-workers, strongly suggested that a broth to which sufficient trypsin had been added to make sure that the antitryptic power of the blood was neutralised would be a pre-eminently suitable medium to use for making blood cultures. Taking into consideration the fact that the antitryptic power of the serum is generally very much increased in the infected, it was decided that the proportion of trypsin in the broth should be not less than 5 per cent. Tubes containing 5 c.c. of such a broth could be relied upon always to neutralise the antitryptic power of 1 c.c. of blood. Before passing on to make blood cultures it was ascertained that all the ordinary organisms grew readily in this medium. Staphylococcus, streptococcus (several strains), pneumococcus, B. typhosus, B. paratyphosus A and B, B. pyocyaneus, vibrio choleræ, micrococcus melitensis, B. perfringens, and B. anthracis, all gave abundant and rapid growths when planted in 5 per cent. of trypsin broth.

The first series of blood cultures were made from animals. The animals used in these experiments were rabbits which had been infected by intravenous inoculations of staphylococcus or streptococcus. Samples of blood were drawn off from the heart at varying intervals after infection and distributed into a series of tubes, some of which contained 5 per cent. trypsin broth, the others simple broth. The details of these experiments are given in tabular form. (Table V.)

TABLE V.—*Showing the Result of Blood Cultures made from Rabbits.*

Rabbit 1. Inoculated with 0·8 c.c. of a 24-hour old broth culture of staphylococcus into the aural vein. 5 c.c. of blood drawn off from the heart 4 days after the inoculation. 0·5 c.c. of blood added to each tube of medium, 4 tubes of trypsin broth, and 4 tubes of simple broth (3 c.c.). These tubes were incubated at 37° C. and examined at varying intervals.

Trypsin broth.				Simple broth.			
Tube.	Incubation.			Tube.	Incubation.		
	11 hours.	1 day.	2 days.		11 hours.	1 day.	2 days.
1	+	+	+	1	—	+	+
2	—	+	+	2	—	+	+
3	—	+	+	3	—	—	—
4	—	—	—	4	—	—	—

Note.—The sign — indicates that no growth could be detected either by the examination of films or by subculture; the sign + indicates that growth had occurred

Same rabbit. Blood drawn off at the same time, but only 0·05 c.c. of blood added to each tube of broth (3 c.c.).

Trypsin broth.				Simple broth.			
Tube.	1 day.	2 days.	6 days.	Tube.	1 day.	2 days.	6 days.
1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+
3	+	+	+	3	—	—	—
4	—	—	—	4	—	—	—

Rabbit 2. Inoculated intravenously with 0·2 c.c. of the same staphylococcic broth culture. Blood drawn off from the heart 4 days after inoculation. 0·5 c.c. of blood added to each tube of broth (2 c.c.).

Trypsin broth.					Simple broth.					
Tube.	16 hours	40 hours	3 days	4 days	Tube.	16 hours	40 hours	3 days	4 days	5 days
1	+	+	+	+	1	—	+	+	+	+
2	+	+	+	+	2	—	+	+	+	+
3	+	+	+	+	3	—	—	—	—	—
4	+	+	+	+	4	—	—	—	—	—
5	+	+	+	+	5	—	—	—	—	—
6	+	+	+	+	6					
7	—	—	—	—	7					

Rabbit 3. Inoculated intravenously with 0·5 c.c. of a 24-hour old broth culture of streptococcus pyogenes. 5 c.c. of blood drawn off from the heart 16 hours after the inoculation. 0·5 c.c. of blood added to each tube of broth (3 c.c.).

Trypsin broth.				Simple broth.			
Tube.	11 hours.	1 day.	2 days.	Tube.	11 hours.	1 day.	2 days.
1	+	+	+	1	+	+	+
2	+	+	+	2	—	+	+
3	+	+	+	3	—	+	+
4	+	+	+	4	—	+	+
5	+	+	+	5	—	—	+

Same rabbit. Blood drawn off from the heart 3 days after the inoculation. 0·05 c.c. of blood added to each tube of broth (4 c.c.).

Trypsin broth.			Simple broth.			
Tube.	26 hours.	2 days.	Tube.	26 hours.	2 days.	4 days.	6 days.
1	+*	+	1	+	+	+	+
2	+	+	2	+	+	+	+
3	+	+	3	+	+	+	+
4	+	+	4	—	—	—	—
5	+	+	5	—	—	—	—

* Abundant growth.

Rabbit 4. Inoculated intravenously with 0·1 c.c. of the same streptococcus culture, 5 c.c. of blood drawn off from the heart 16 hours after the inoculation, 0·5 c.c. of blood added to each tube of broth (3 c.c.).

Trypsin broth.				Simple broth.				
Tube.	11 hours	1 day	2 days	Tube.	11 hours	1 day	2 days	6 days
1	+	+	+	1	+	+	+	+
2	+	+	+	2	+	+	+	+
3	+	+	+	3	+	+	+	+
4	+	+	+	4	—	+	+	+
5	+	+	+	5	—	—	—	+

Same rabbit. Blood drawn off from heart 3 days after inoculation. 0·1 c.c. of blood added to each tube of broth (4 c.c.).

Trypsin broth.		Simple broth.	
Tube.	26 hours incubation.	Tube.	26 hours incubation.
1	+ abundant growth.	1	+ slight growth.
2	+ ,, ,,	2	— Not examined subsequently.
3	+ ,, ,,	3	—
4	+ ,, ,,	4	—
5	+ ,, ,,	5	—

Same rabbit. 0·5 c.c. of blood drawn off from the heart 40 hours after the inoculation. 0·05 c.c. of blood added to each tube of broth (4 c.c.).

Trypsin broth.					Simple broth.				
Tube.	7 hours	1 day	2 days	5 days	Tube.	7 hours	1 day	2 days	5 days
1	+	+	+	+	1	—	—	—	—
2	—	+	+	+	2	—	—	—	—
3	—	—	—	—	3	—	—	—	—
4	—	—	—	—	4	—	—	—	—
5	—	—	—	—	5	—	—	—	—

These results demonstrate that the use of trypsin broth was of distinct advantage in each case. Growth was detected earlier in almost every experiment, and also in most cases occurred in a larger percentage of the tubes. In one experiment growth was detected after incubation for 24 hours in two out of five of the trypsin tubes, but in a similar number of cultures made in simple broth no growth was detected even after the lapse of five days.

Table VI. shows the results obtained in a series of blood cultures made on patients. The usual technique was employed—blood being drawn off from a vein at the bend of the elbow and planted into a series of tubes.

TABLE VI.

Patient 1. Soldier from Gallipoli with dysentery. 10 c.c. of blood drawn off from a vein at the bend of the elbow. 1 c.c. of blood planted into each tube, and examined after varying intervals.

Trypsin broth.						Simple broth.					
	Incubation.						Incubation.				
Tube.	24 hours	2 days	3 days	4 days	5 days	Tube.	24 hours	2 days	3 days	4 days	5 days
1	+	+	+	+	+	1	—	—	+	+	+
2	—	+	+	+	+	2	—	—	—	—	+
3	—	+	+	+	+	3	—	—	—	—	—
4	—	—	—	—	—	4	—	—	—	—	—
5	—	—	—	—	—	5	—	—	—	—	—

Organism isolated proved to be B. paratyphosus A.

Same patient. Blood culture performed 2 days later than the above. 10 c.c. of blood drawn off; 1 c.c. planted into each tube of broth.

Trypsin broth.					Simple broth.				
Tube.	24 hours	2 days	3 days	7 days	Tube.	24 hours	2 days	3 days	7 days
1	+	+	+	+	1	—	—	+	+
2	+	+	+	+	2	—	—	—	—
3	—	—	—	—	3	—	—	—	—
4	—	—	—	—	4	—	—	—	—

Organism isolated proved to be B. paratyphosus A.

Patient 2. Soldier invalided from Gallipoli with dysentery. 10 c.c. of blood drawn off from a vein at the end of elbow. 1 c.c. of blood planted into each tube.

Trypsin broth.				Simple broth.			
Tube.	24 hours.	2 days.	3 days.	Tube.	24 hours.	2 days.	3 days.
1	+	+	+	1	—	—	+
2	+	+	+	2	—	—	+
3	—	+	+	3	—	—	+
4	—	—	+	4	—	—	+
5	—	—	+	5	—	—	—

Organism isolated proved to be B. paratyphosus A.

Patient 3. A case of severe pneumonia. 10 c.c. of blood drawn off from the vein.

Trypsin broth.		Simple broth.		
Tube.	24 hours.	Tube.	24 hours.	5 days.
1	+	1	—	—
2	+	2	—	—
3	+	3	—	—
4	+	4	—	—
5	+	5	—	—

Organism isolated proved to be a streptococcus.

Here again the results obtained in every case show advantages in using trypsin broth, either in respect of the number of tubes in which growth was found or as regards the time taken for growth to appear. In one case, for the details of which we have to thank Dr. H. M. Woodward, no growth appeared at all in the tubes containing ordinary broth, whereas abundant growth was present in every trypsin broth tube at the end of 24 hours. It is also to be noted that three of the blood cultures here quoted as demonstrating the value of trypsin yielded a growth of paratyphoid bacilli (B. paratyphosus A), and in every case within 24 hours. Such a result is similar to that which would have been obtained by using bile as the medium for blood culture. Further, the fact that paratyphoid bacilli as well as staphylococci and streptococci were all recovered more easily by the use of trypsin lends support to the idea that this procedure, depending, as has been shown, upon elimination of the antibacterial properties of the blood, has a wide application in the investigation of disease and is not especially advantageous for any one group of pathogenic organisms.

Having from these results satisfied ourselves that the use of trypsin broth in making blood cultures was of a very distinct advantage, it became an important practical point to ascertain if such a broth retained its properties on keeping. The following experiments were therefore carried out.

Five per cent. of trypsin solution was added to broth on April 8th and kept for several weeks at laboratory temperature. Its tryptic power was determined on April 8th, and at intervals subsequently, by making from it a series of dilutions and mixing one volume of each of these with one volume of milk to which 1 per cent. of calcium chloride (cryst.) had been added. After incubation for 15 minutes at 50° C. these mixtures were thrown into water to ascertain if clotting had taken place.

TABLE VII.

Date of experiment.	Dilutions of trypsin broth.			
	1 in 50.	1 in 100.	1 in 150.	1 in 200.
April 8th	Clot.	Clot.	Clot.	Not done.
,, 15th	,,	,,	Loose clot.	No clot.
,, 25th	,,	,,	,, ,,	,,
May 25th	,,	,,	,, ,,	,,
July 1st	,,	,,	No clot.	,,

Another series of experiments was made with the trypsin broth made up on April 8th to determine roughly whether it would retain its power to prevent the clotting of blood. A volume of the broth was mixed with varying quantities of blood, and the formation or non-formation of a clot noted.

TABLE VIII.

Date of experiment.	2 vols. of broth. 1 vol. of blood.	1 vol. of broth. 1 vol. of blood.
April 8th	No clot.	No clot.
,, 15th	,,	,,
May 10th	,,	,,
,, 25th	,,	Clot.
July 1st	Clot.	,,

From these experiments it is seen that for at least seven weeks the broth may be kept at room temperature without serious loss of its tryptic power or of its power to prevent the clotting of blood, but that after that period its deterioration becomes more evident.

Conclusions.—The authors' experiments have confirmed the findings of Wright and his fellow workers, which showed that when, by mixture with trypsin, the antitryptic power of blood is neutralised, the blood loses its power of clotting and also its antibacterial properties. These are precisely the changes which it is desirable to bring about when attempting to cultivate pathogenic micro-organisms from the circulating blood. A series of blood cultures performed in duplicate with trypsin broth and simple broth has shown that the employment of trypsin in that procedure is clearly advantageous—the organisms having been in some cases recovered only in the trypsin tubes, while in the other cases they were recovered earlier and more frequently in these than in the control tubes. It is probable that this method favours the cultivation of *any* microbe that may be present in the blood, and not especially one particular organism or group of organisms, as is the case with bile media; staphylococci, streptococci, paratyphoid bacilli, and in one experiment not quoted, anthrax bacilli, were readily isolated from blood by the use of trypsin broth.

In order to be sure of neutralising the antitryptic power of the inoculated blood it is recommended to employ broth containing not less than 5 per cent. of trypsin solution (compound solution of trypsin, Allen and Hanburys) and to add not more than 1 c.c. of blood to each 5 c.c. tube of such a broth. When a supply of broth is not at hand, or the blood has to be sent by post to a laboratory, undiluted trypsin solution may conveniently be mixed with the blood specimen immediately on its withdrawal from the vein, say in the proportion of 1 of trypsin to 4 of blood. Subsequently this unclotted blood should be planted into broth tubes for incubation—or where this cannot be done, the blood may be incubated without dilution and the growth of organisms sought for in the plasma.

TREATMENT OF CARRIERS OF AMŒBIC DYSENTERY.

NOTE ON THE USE OF THE DOUBLE IODIDE OF EMETINE AND BISMUTH.

BY H. H. DALE, M.D., F.R.S.

(*From the Department of Biochemistry and Pharmacology, Medical Research Committee.*)

THE treatment of entamœbiasis in this country during the past year has been largely concerned with the problem of freeing the chronic "carriers" from their infection. Experience in Egypt in dealing with patients who continue to pass cysts after the dysentery has completely cleared up seems to have led to the conclusion that a full course of 10 or 12 grains of emetine hydrochloride, given hypodermically, will practically always eradicate the infection. The experience in this country, to judge from hospital records which I have had the privilege of seeing, does not altogether tally with this; for there seems to have been a not inconsiderable proportion of cases in which such a course of emetine has led only to a temporary absence of cysts from the fæces, followed by an early recurrence. These cases, relapsing into cyst-passing again and again after successive courses of emetine, have presented a difficult problem to the medical officers in charge of them. Their frequent occurrence among the cases treated in England was to be expected, for these consisted largely of cases which had undergone relapse into chronic "carrying," after apparently successful treatment of their acute infection with emetine; others had probably never been freed, by repeated dosage with emetine, before their return to this country; while others, again, were apparently "contact carriers," with no history of previous dysentery or treatment. It was clearly a matter of importance that these men should be freed from the danger to themselves and to others entailed by the persistent focus of infection.

The pathology of the chronic carrier of entamœba histolytica seems to be still imperfect in that it has not been definitely ascertained whether the cyst-producing entamœbæ are living freely in the intestinal contents, like entamœba coli, or are localised in a partly healed pocket or sinus. The occurrence of liver abscess without acute dysentery seems to favour the latter supposition. In either case the relative failure of hypodermic treatment with emetine in

this condition could be explained by the entamœba being more or less completely shut off from the circulation and tissue fluids of the patient. The alleged superior efficacy in these cases of the older treatment with ipecacuanha by the mouth is in line with such a conception. By these considerations I was led to suggest a trial, in cases refractory to hypodermic emetine, of oral administration of this alkaloid in a form which gave promise of combining the advantages of the ipecacuanha treatment with freedom from its notorious difficulties and drawbacks. The results have been so far promising that it seems worth while, in the interests of a wider trial, to make mention of them at their present stage of incompleteness.

The compound which has been used is a double iodide of emetine and bismuth which was described last year by Du Mez, who suggested it as suitable for oral administration of emetine. It has the useful property, from this point of view, of being practically insoluble in dilute acids, but soluble with comparative ease in weak alkali. It might be expected therefore to pass the stomach unaltered, and then, being dissolved in the alkaline juices of the duodenum, to undergo gradual decomposition as it passed along the bowel, with liberation of emetine and precipitation of bismuth sulphide. Du Mez obtained promising, but rather irregular, results on dogs to which he gave the compound. So far as I have been able to ascertain it has not hitherto been tried clinically.

My colleague, Dr. Barger, prepared me a sample of this double iodide, and I tested it, in the first place, on cats. I found that large cats, weighing upwards of 3 kilogrammes, could take repeated doses of 40 milligrammes without vomiting, the only effect being some looseness of the bowel. 60 milligrammes (containing about 20 milligrammes of emetine) produced vomiting, but the fact that this occurred some 5 hours after the administration, while purgation occurred about 1½ hours after the drug had been given, indicated that the vomiting was not due to direct irritation of the stomach, but was secondary to liberation and absorption of emetine in the bowel, and therefore comparable to the vomiting which follows a large hypodermic dose. If treatment with these larger doses was continued, the symptoms of chronic emetine poisoning, which I have previously described, made their appearance, as with hypodermic administration.

Messrs. Burroughs Wellcome and Co. kindly placed at my disposal a quantity of the compound for preliminary clinical trial, and further quantities were made to the order of the Medical Research Committee. The first trial was made at the Graylingwell Military Hospital, Chichester, by kind coöperation of Lieutenant-Colonel H. A. Kidd, R.A.M.C., of Major J. L. Maxwell, R.A.M.C., and the other medical officers in direct charge of the patients, and of Mr. Geoffrey Paget and Mr. W. O. Redman King, who made the protozoological examinations. Mr. King has furnished me with a résumé of the results on ten patients, all of whom had repeatedly shown early recurrence of cyst-passing after courses of hypodermic emetine. Of these patients six have already been discharged as cured, having failed to show any histolytica cysts, with stringent daily examination of the fæces, during six weeks, as result of a full course of the double iodide by the mouth. Two of these cases have not much evidential value, since the double iodide treatment was started while cysts were still absent, as the immediate result of a hypodermic course. The other four are open to no such criticism. A seventh case relapsed after a full course of the double iodide, but, after a second course, has been free from cysts for four weeks, so that a permanent cure is probable. The eighth case has been unable to stand a full course owing to nausea, but cysts have been absent for some time, with administration on alternate days, so that the result is hopeful. There remain one case in which relapse has occurred after two full courses and one in which the treatment could not be continued owing to the vomiting and diarrhœa which it caused.

Bearing in mind the fact that the cure of these patients had been practically given up as hopeless with the ordinary hypodermic emetine treatment, and that the standard of cure demanded—six weeks' absence of cysts, with daily examination—was a very high one, the results must be considered promising. Trouble occurred in some cases from vomiting, but this was overcome in most instances. Administration during or just after a full meal seems to have been the best method for avoiding vomiting, probably owing to the acidity of the stomach contents at this time. Some patients who were reported as vomiting with the first doses seemed to acquire a tolerance subsequently. The fact that the vomiting is delayed probably means that most of the dose is in the intestine before it occurs, so that the comfort of the patient is affected more than the efficacy of the treatment. 30 to 36 grains, equivalent to about 10 to 12 grains of emetine hydrochloride, has been regarded as a full course, and the daily dose has varied from 2 to 4 grains, given in capsules. 3 grains, representing 1 grain of emetine hydrochloride, seems to be a good average daily dose, and 12 such doses may be given in succession, unless giddiness, depression, or diarrhœa become severe. The frequency of vomiting is in no way comparable to that seen with the ipecacuanha treatment, and there is no need, as a rule, to restrict diet, to keep the patient recumbent, or to adopt the precautionary measures which the ipecacuanha treatment entails. The daily dose suggested of 3 grains of double iodide is equivalent in emetine to some 60 grains of ipecacuanha.

Several other cases, privately treated, are still under observation, but the results, which Dr. G. C. Low and others have kindly communicated to me, are similarly promising. A further trial is in progress at another military hospital, through the kind interest of the commanding officer and of Mr. C. C. Dobell, who is responsible in this instance for the protozoological findings. One fresh case of acute dysentery has been treated by Dr. Low with daily doses of 3 grains of the double iodide, with results apparently as good as those of the hypodermic emetine treatment. If it be a fact that the residual infection, with healing ulceration, is more accessible to the emetine given by the mouth, it may be worth while to consider whether the later doses of the usual course of emetine, given in an acute case, would not with advantage be given as the double iodide. It seems possible that the risk of subsequent "cyst-carrying" might thus be diminished. The possibility of using the emetine-bismuthous-iodide prophylactically seems to me also well worthy of consideration. I believe that most men could take a grain or so every few days without any notable effect on health, comfort, or efficiency. I am having some tablets prepared, keratin-coated, as an additional safeguard against vomiting, and will try them on some normal subjects in the first instance. Experience would have to show how small and infrequent a dose would give protection to those exposed to the chance of being infected. A drawback to the wide use of the compound as a wholesale prophylactic would, under present conditions, be the expense entailed. The ordinary emetine salts are expensive enough, and the extra trouble of making the double iodide will presumably make the latter, dose for dose, even more costly, though the difference should not be very large.

My best thanks are due to the gentlemen above mentioned, who have interested themselves in the trials recorded, and to others who are giving their coöperation in those still in progress.

Reference.—Du Mez: Philippine Jour. of Sci. (B) X., p. 73, 1915.

Dr. T. G. Moorhead, F.R.C.P. Irel., Captain, R.A.M.C. (at present on foreign service), visiting physician to the Royal City of Dublin Hospital, has been elected professor of practice of medicine in the School of the Royal College of Surgeons in Ireland, in room of Sir John Moore, retired.

AN EXAMINATION FOR MATERNITY AND CHILD WELFARE WORKERS.—In order to assist local authorities in the selection of suitable child welfare workers the Royal Sanitary Institute have just established an examination in sequence with the present examination for health visitors, but requiring a wider experience and a more developed knowledge of the subjects cognate to child welfare, including ante-natal conditions and the various laws and regulations relating thereto. The examination will be supplemental to the health visitors' examination, the certificate for which is one of the qualifications named in the General Order of the Local Government Board (1909) relating to the office of health visitor and school nurse. It is proposed to hold the first examination in London on Dec. 8th and 9th. A syllabus has been issued and can be obtained from the Secretary of the Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W.

A NOTE ON

THE NECESSITY FOR PROLONGED TREATMENT IN CASES OF INFANTILE PARALYSIS.

BY FRANCIS HERNAMAN-JOHNSON, M.D. ABERD.,
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MUCH of our treatment of the weakness and deformity which may result from an attack of poliomyelitis fails owing to lack of proper "following up." I am fortunately able to illustrate the good effects of perseverance by giving notes and illustrations of the present-day condition of a child whose case I reported in THE LANCET of June 24th, 1911 (p. 1700). The following is a quotation from that part of my article which described what was found in that case.

"The patient, a girl aged 5 years, suffered from infantile paralysis of the right lower limb. The attack had occurred at the age of 18 months. The child was wearing an appliance weighing 6 lb., the main feature of which was a heavy steel running up the leg from ankle to waist and secured round the latter by a metal band. The patient progressed by a curious hopping motion, dragging the affected limb behind her, with the foot everted almost to a right angle. The limb had shown no improvement for two years.

"On examination I found all the muscles below the knee to be completely paralysed, so that the condition known as 'flail-ankle' obtained. The thigh and buttock muscles were small and weakly, but they responded fairly well to faradic stimulation. Partial subluxation of the knee-joint was also present, partly due to the lack of tone in the biceps and quadriceps femoris, but chiefly depending on the complete failure of the gastrocnemius. The whole limb was shrunken, and showed 2½ inches of relative shortening. It was, moreover, cold and clammy to the touch, with a temperature 2°F. below that of its fellow, a condition which I judged to be in part due to the weight and rigidity of its supporting apparatus. (Fig. 1 shows the diseased limb.) As is frequently the case in such limbs, sensibility to pain and changes of temperature was greatly diminished, although tactile sensation remained unaffected. A careful electrical investigation led me to conclude that the leg muscles were probably hopeless, but I nevertheless made bold to tell the parents that I would enable the child to do without external irons and that she need wear no support of any kind above the middle of the thigh."

A special boot was constructed (weighing only 2 lb.), in which light steel supports were concealed. (Fig. 2.) Under treatment by electrical stimulation a very rapid increase in size and power occurred in the buttock and thigh muscles. At the end of two months—when the treatment was suspended—there was not, however, any sign of improvement below the knee.

The child has been seen twice yearly until recently and has had about a month's electrical treatment on each occasion. At the end of two years I was surprised to find that power was beginning to return in the calf muscles, and the "relative shortening" had decreased from 2⅛ to 1½ inches. I took away some of the support from the knee, and a year later removed it all. Early in 1915, four years after the patient was first examined, some amount of control on the ankle-joint had been regained, and the affected limb is now only one inch shorter than its fellow. The child now wears an ordinary boot with a little leather stiffening, and an internal raised sole.

FIG. 1. FIG. 2. FIG. 3.

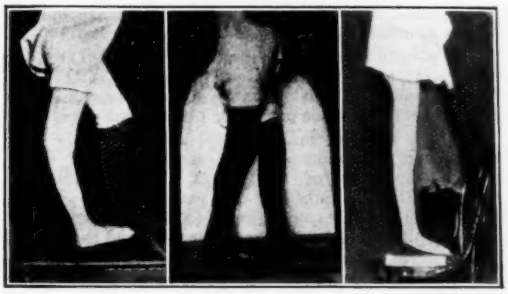


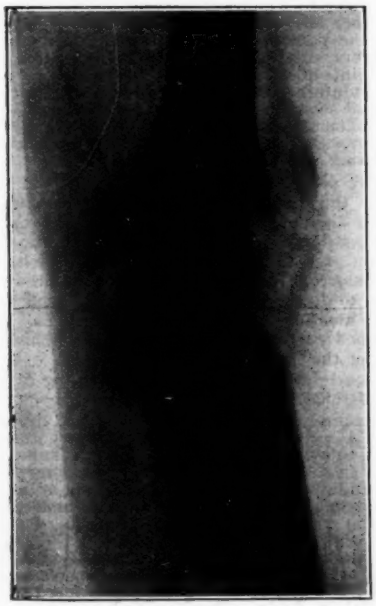
FIG. 1.—1911. Shows backward displacement of knee and atrophy of calf muscles.

FIG. 2.—1911. Specially devised boot; no external irons, weight 2 lb. Artificially padded calf.

FIG. 3.—1915. The curve of the leg has become normal, tone having been restored in the hamstring and calf muscles.

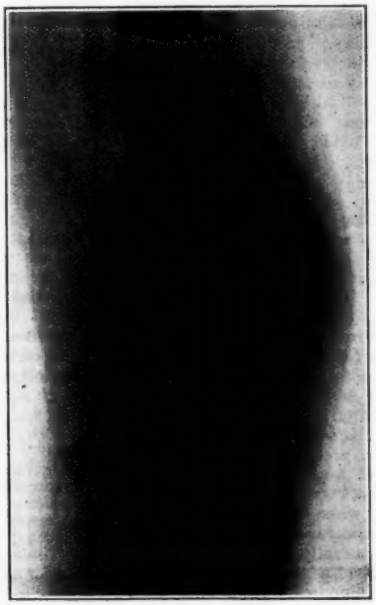
Fig. 3 is unfortunately not so good a photograph as Fig. 1. It shows nevertheless that the curve of the leg has become normal—a result due to the restoration of tone in the hamstring and calf muscles.

FIG. 4.



Right knee-joint. January, 1911. Note rudimentary patella and backward curve of limb.

FIG. 5.



Right knee-joint. June, 1915. Note normal shape of limb.

Figs. 4 and 5 demonstrate that *pari passu* with the visible improvement, the size and density of the bones have increased.

The above is an example of a case properly dealt with over a period of years. There is a converse to such a picture—I have seen cases apparently much less severe go completely to the bad for want of constant attention.

Any apparatus which may be necessary needs frequent modification. Support must not be abruptly withdrawn from a recovering muscle, or it will relapse. On the other hand, if more aid is given than is necessary, progress will be retarded. In a favourable case the relative shortening of a limb should grow less year by year, and therefore any boot extension must be altered accordingly.

The above is the mechanical side of the question. The physiological aspect is equally important. As to prognosis, the case here illustrated shows that an unfavourable opinion

is not always borne out by subsequent events, even though based on careful investigations. In most cases the prognosis is inseparably bound up with the treatment. The effect of electrical stimulation on nerves and muscles which still retain some power of response is rapid and marked. A surprising difference may be brought about in six or eight weeks, and the general growth of the limb is accelerated for some months afterwards. So long, however, as the child is growing, there is a chronic tendency for the affected limb to lag behind its fellow, and there is thus need in young children for a short course of treatment at least twice yearly.

The therapeutic lessons which have been learned in connexion with infantile paralysis are of special interest at the present time, as the rules to be followed are for the most part equally applicable in dealing with war injuries to nerves and muscles. The three following, at least, should always be kept in mind:—

1. A muscle which is chronically overstretched cannot recover. It must be relaxed by means of a suitable splint. This principle was insisted on by Robert Jones many years ago, and its importance cannot be over-emphasised.

2. When such a muscle responds moderately well to faradism—or, in more modern terms, to the small or medium capacities of the Lewis Jones instrument—its recovery will be greatly hastened (and in some cases even determined) by daily rhythmical electrical stimulation. The relaxed position must, however, be maintained throughout.

3. Exercise, whether voluntary or electrically provoked, must never be carried to the point of fatigue. The contraction of a muscle should be not less vigorous—with the same stimulus—at the end of a sitting than at its commencement. It is better that recovery should be delayed by over-caution than that it should be made impossible by excess of zeal.

Cavendish-square, W.

SIX CASES OF WOUNDS OF THE BUTTOCK WITH PERFORATION OF THE INTESTINE.

BY R. B. BLAIR, M.B. EDIN., F.R.C.S. EDIN.,
CAPTAIN, R.A.M.C.

THIS short series illustrates the grave results which may accompany wounds inflicted by rifle or shrapnel bullets or pieces of shell in the region of the buttocks. I have learnt by personal experience that these wounds frequently penetrate the peritoneal cavity and cause injury to the viscera, and that they should therefore be subjected to the most careful investigation. During the last four months six cases of buttock wounds have been admitted into a ward under my charge at a clearing station. Some of these on first examination were thought to be slight, but subsequently proved to be of vital importance. If the wound is probed and the track does not appear to pass towards the peritoneal cavity, one may be led to infer that the abdominal viscera have escaped injury. The first of these reported cases shows that this test may be fallacious, and that further investigation is necessary.

It is frequently far from easy to be certain that penetration of the abdominal cavity has occurred. The signs and symptoms of such a lesion may be self-evident, or, on the other hand, so anomalous as to give rise to great uncertainty. In those cases easy of diagnosis the general appearance of the patient is typical. The abdominal facies, pallor, sunken eyes, and anxious expression, the legs drawn up, and respirations rapid and thoracic in type, present an unmistakable picture. The abdomen is rigid and tender, vomiting is present, and the pulse is rapid and wiry.

Difficulties in diagnosis arise when such symptoms are slight in degree. The facial appearance may not assume an abdominal character, but generally a look of distress is present. Vomiting may be a delayed symptom, although nausea is often complained of. Abdominal pain may be slight and only elicited on pressure. Rigidity of the abdominal wall may be absent, and tenderness may be limited to one localised part. The character of the pulse is perhaps the most important sign—its rate is invariably increased, it becomes small in volume, thready, and may be irregular.

The most important guides, then, are the pulse and facial appearance. As one famous consultant remarked on seeing one of these cases, "Yes, he looks more ill than a buttock case should." If the wound be probed, the track may or may not pass in the direction of the abdominal cavity. In all cases of doubt it is necessary to enlarge the wound and explore it thoroughly.

The first of these cases is a striking illustration of many of the points to which I wish to draw attention.

CASE 1.—Shell wound of left buttock. *History.*—Wounded at 10 A.M. on April 18th; arrived at V—— at 10 P.M. same day, when he had cocoa to drink and vomited soon afterwards. He reached the clearing station at 1.30 A.M. on April 19th. He walked into the ward, said he was slightly wounded, asked for some cocoa, and said he wanted to sleep. He slept well, had a breakfast of tea and bread-and-butter at 7.30 A.M., and was sick once at 9 A.M. At 1 P.M. he passed a small, loose, dark motion, and said he felt much better. He complained of some abdominal pain, which he referred to the concussion of the shell.

On examination the patient did not look seriously ill; he showed no pallor, but there was an expression of distress. The pulse was rapid (110 to 120) and small in volume. The abdomen moved well on respiration, and rigidity was not present. There was slight tenderness on palpation over the brim of the pelvis on the right side; percussion gave a resonant note. The entrance wound, 1 inch above the left tuber ischii, had an inward and slightly upward direction towards the natal cleft. Vomited matter, dark-brown in colour, not stercoraceous, and small in quantity. When the patient was first seen by Colonel H. M. Rigby he was standing upright, quite unconscious of his serious condition.

Operation at 4 p.m., April 19th.—The buttock wound was laid open and the track was found to pass towards the coccyx, which was fractured. On this discovery it was decided to explore the abdomen. This was done by a median incision between the umbilicus and the pubes. On opening the peritoneal cavity no free blood was found. There was evidence of peritonitis in widespread patches of lymph along the lower coils of the small bowel. The lowest portion of the ileum was found adherent in the right iliac fossa, where free fluid like small bowel content was present. Free fluid was also present in the pelvis. An oblique tear 1 inch in length was found in the wall of the bowel about 18 inches from the ileo-cæcal junction. Just inside the intestinal lesion there was a ragged piece of shrapnel about the size of the terminal phalanx of the thumb, within the lumen of the bowel. It was thought necessary to resect the damaged portion, and about 2 inches were removed. An end-to-end anastomosis was done with sutures of linen thread. The free fluid was mopped up with dry gauze; no other lesion was found. A rubber drain was introduced into the pouch of Douglas, and the abdominal wall closed in layers with catgut. During the operation the patient had two pints of saline given subcutaneously.

Recovery was uninterrupted. The drain was removed on the fourth day, and secondary sutures were introduced into the buttock wound on the fifth day. The bowels were moved on the fourth day. On the tenth day after the operation the patient was evacuated to the base.

There are many points of interest in this case, but the most striking was the almost complete absence of symptoms indicating a severe abdominal injury. The patient was able to walk into the ward 13¼ hours after being wounded, and was able to stand up 15 hours later. He had delayed vomiting in 12 hours after he received his wound, although he had had fluids to drink. The severity of the lesion was obscured by the absence of definite physical signs, the extraordinarily good condition of the patient, and the misleading direction of the track of the missile.

The following are brief notes of the five remaining cases, to which slight reference has been made.

CASE 2.—Shell wound of right buttock. Wounded 10 A.M., Dec. 19th, 1915. Admitted 8 A.M., Dec. 20th. Entry wound situated 2 inches below and behind the anterior superior spine on the right side. No wound of exit. Vomiting took place on the evening of the 19th and once again after admission. No complaint of abdominal pain, but tenderness was present in the right iliac fossa on palpation. Pulse-rate 108.

Operation.—Laparotomy, right rectus. A small quantity of blood was present in the abdominal cavity. A perforation was found in the right wall of the cæcum and sutured with linen thread. Pelvic drain. *Result.*—Died at 3 P.M. on Dec. 21st. Extensive gas gangrene was found in the wall of the cæcum and surrounding tissues.

Remarks.—The patient did not look like an abdominal case. The pulse-rate was increased, and there was tenderness in

the right iliac fossa, but it was only after exploration of the wound that it was decided to open the abdomen.

CASE 3. Shrapnel wounds of buttocks. Wounded at 10 A.M., Feb. 13th, 1916. Admitted at 8 A.M., Feb. 15th. Entrance wounds one in each buttock. No wounds of exit. Patient in bad condition. Repeated vomiting of dark-brown stercoraceous fluid. Pulse 130, thready.

Operation.—Median laparotomy. A small quantity of free blood was found in the peritoneal cavity. Two perforations were found in the upper part of the ileum, with a tear in the mesentery. Four inches of gut were resected, and an end-to-end anastomosis was made. One perforation in the rectum was sutured. Pelvic drain. *Result.*—Died four hours later.

Remarks.—The signs and symptoms of a severe abdominal lesion were obvious. The patient had to remain in a "dug-out" for nearly 48 hours on account of shell-fire before being brought to hospital.

CASE 4.—Gunshot wound of left buttock. Wounded 4 A.M., March 27th, 1916. Admitted 6 P.M. on same day. Entry wound ½ inch below the natal fold in the middle line of the posterior surface of the left thigh. No exit wound. Abdominal pain was felt one hour after the wound was received. He felt sick after admission, and vomited once before the operation. On palpation tenderness was present in the left iliac fossa. Pulse 80, of good quality.

Operation 10 p.m.—Laparotomy, left rectus. The peritoneal cavity contained a considerable quantity of free blood. Two small perforations were found in an upper loop of the ileum, and were sutured with linen thread. No other lesions were found. The bullet was not found. Suprapubic drain inserted. *Result.*—Good recovery.

Remarks.—The general condition and pulse were good. The history of abdominal pain after the wound was received was definite. The wound of entrance was below the buttock, but when shot the patient was in a stooping attitude.

CASE 5.—Shrapnel wound of left buttock. Wounded 4 P.M., March 27th, 1916. Admitted 6 A.M., March 28th. Wound of entry in the left buttock. No exit wound. Abdominal pain and rigidity were present; vomiting took place on the evening of March 27th, and was repeated during the night. Pulse 120, feeble.

Operation.—A catheter passed produced bright blood. The wound in the buttock was explored, and found to have fractured the coccyx. Median laparotomy. Multiple wounds were found in the small gut, and a tear 2 inches in length was found in the superior wall of the bladder. A double resection of 18 inches and 4 inches, with end-to-end anastomosis was done, three other perforations were sutured, and the tear in the wall of the bladder was closed by suture. A fragment of shrapnel was found lying in a fold of mesentery. Pelvic drain. *Result.*—Died on completion of the operation.

Remarks.—The condition of this case was desperate; he looked pinched and collapsed and the pulse was of very poor quality.

CASE 6.—Shell wound of left buttock. Wounded 12 P.M., April 6th, 1916. Admitted 6 A.M., April 7th. Wound of entry in the left buttock; no exit wound. Tenderness on palpation was present in the right iliac fossa and the right lumbar region. The patient vomited twice after admission and during the night. Pulse 120.

Operation.—Median laparotomy. A quantity of foul-smelling fluid was present in the peritoneal cavity, but no blood. Peritonitis was generalised. Two perforations were found in the ileum, 12 inches from the ileo-cæcal junction; they were sutured with linen thread. No fragment of metal was found. A pelvic drain was inserted. *Result.*—A fæcal fistula developed on the fourth day after the operation. The patient was evacuated to the base on the eleventh day after the operation. The discharge was then less, the pulse was 96, temperature 99·8° F., and the general condition was good.

Remarks.—The patient looked ill, the pulse was rapid, there was vomiting, and the direction of the wound was towards the abdomen.

I wish to express my indebtedness to Lieutenant-Colonel J. W. Langstaff for his kind permission to publish these cases.

Sir Robert Woods, ex-President, Royal College of Surgeons in Ireland, has been appointed honorary professor of laryngology in the University of Dublin.

DONATIONS AND BEQUESTS.—The Chelsea Hospital for Women has received from the Public Trustee a grant of £1600 from the Geldart Estate, £50 from the Goldsmiths' Company, and £250 from the Rev. Perceval Laurence towards the cost of the rebuilding of the hospital.—An anonymous gift of £10,000 3½ per cent. War Loan has been received by the governors of the Sheffield Royal Hospital.—By will the late Rev. George Birkett Latreille, Brownswood Park, Finsbury Park, bequeathed 1000 guineas to the Great Northern Hospital, Holloway, for the endowment of a "George and Philos Bed."

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

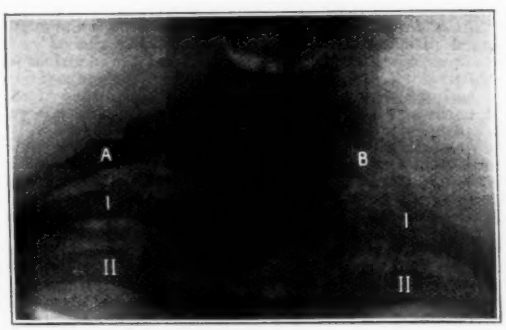
A CASE OF DOUBLE CERVICAL RIB.

BY HAROLD F. RENTON, M.D., B.S. LOND., M.R.C.S., L.R.C.P. LOND.

CASES of cervical rib are by no means uncommon, but the history of a case that came recently under my notice would seem to make it of sufficient interest to justify its publication.

The patient, a man aged 42, had been under treatment for a considerable period for what he called "dyspepsia." This consisted of pain which passed in girdle fashion along the left ribs from the axilla towards the breast and backwards towards the scapula. The pain had no relation to food, however, and nothing gave him relief. He came to see me on May 14th of this year complaining that he had injured his neck. He had been lifting a heavy sack of flour and had slipped in some manner, so throwing the whole weight of the sack against the side of his neck. Since the accident he had been troubled with persistent pain on the left side of the neck and a dull, aching pain down the left arm. The pain in the arm followed the inner aspect of the limb and passed downwards to the third and fourth fingers and the inner side of the ring finger. There was, moreover, a feeling of numbness on the inner and back aspect of the upper arm. The patient complained that his three inner fingers seemed to be asleep, and that the pain in the arm was worse when the limb was allowed to hang loose, vertically downwards, and when he rested his head on his pillow at night.

Examination.—There was no superficial bruising or discolouration. The muscles of the left side of the neck appeared to be very highly developed, more so than those of the right, which was strange considering that the patient



Radiogram taken from behind showing cervical ribs. A, left; B, right. The first and second dorsal ribs on each side are marked I. and II.

was a right-handed man, and there was a large swelling completely filling the left supraclavicular fossa. The swelling was hard and immovable, and pressure upon it caused acute pain. The subclavian artery could be felt passing outwards across its surface and was proved to have no connexion with it. The movement of the arm was free in all directions, and the patient only complained of pain when the limb was pulled vertically downwards. There was no anæsthesia of the arm, though sensation along its inner aspect as far as the fingers was somewhat impaired. The power in the left hand was good. There was no delay in the radial pulse as compared with the right side, and the hand was warm and of good colour, proving that there was no interference with the circulation. A diagnosis of left cervical rib was made. The patient was subjected to X ray examination and the diagnosis was confirmed. Moreover, the presence of a small cervical rib upon the right side was revealed.

The photograph of which the accompanying illustration is a reproduction was taken in the following manner. The patient was placed upon his back upon a couch, the head being allowed to hang just over the edge. This position served to separate the ribs and throw the lower jaw away from the region of the neck. The plate was placed behind the patient, the exposure allowed being 45 seconds. A

mammoth tube was employed, the "rays" passing vertically from a distance of 20 inches.

The interest of the case would seem to be centred in the following points. 1. The absence of symptoms, with the exception of the girdle pain, until the day of his accident. In a young individual symptoms are rare at first, but when the sufferer has reached the age of the patient under discussion pressure symptoms are commonly present. 2. The possibility that the accident had resulted in partial dislocation of the cervical rib, so inducing an acute onset of the typical symptoms. 3. The great length of the cervical rib as shown in the X ray photograph. 4. The explanation of the distribution of the pain.

The pain down the inner side of the arm and affecting the inner fingers, as described above, was due to pressure upon the lower nerve trunk of the brachial plexus, resulting in sensory disturbance in the areas of skin supplied by the lesser internal cutaneous, internal cutaneous, and ulnar nerves. The pain spreading in girdle fashion round the left ribs, which had been attributed to dyspepsia, was probably reflex in origin, passing from the lesser internal cutaneous to the second intercostal nerve by way of the intercosto-humeral nerve which communicates with both.

Oldham.

A CASE OF OMENTAL FIBROMA.

BY E. MANSEL SYMPSON, M.D. CANTAB., M.R.C.S.,
HONORARY SURGEON, LINCOLN COUNTY HOSPITAL; LIEUTENANT-COLONEL, R.A.M.C. (T.F.), 4TH NORTHERN GENERAL HOSPITAL.

As peritoneal or omental fibromata are not very common it seems worth while placing the following on record.

The patient, a married woman aged 37, was sent to me by Mr. H. H. Ballachey, of Heckington, and admitted to the Lincoln County Hospital on May 9th suffering from an abdominal tumour. She had had four children (three now living), one miscarriage 11 years ago, the last child having been born seven years ago. For eight years past she had noticed a "lump" growing in the left iliac fossa. In September, 1915, this suddenly increased in size and became more centrally placed in the abdomen. She complained of a good deal of abdominal pain (rather vague, dragging and referred to the epigastrium), and had had several attacks of vomiting. Neither of these had borne any time relation to food. The bowels generally were rather confined, and there had been some loss of weight. She was anæmic and emaciated. A plainly visible tumour occupied the entire umbilical, lower part of the epigastric and the major part of the left iliac fossa, moving with respiration. It was very freely movable within the abdomen, attended with little discomfort to the patient. It appeared to consist of a hard central portion, surrounded by a very soft but not exactly fluid peripheral part. No pulsation was felt in the tumour. The percussion note over the whole tumour was dull, otherwise the abdomen was normal. Examination per vaginam: Uterus normal in size, freely movable irrespective of the tumour. Right ovary felt to be normal; left one could not be felt owing to the left fornix being occupied by the new growth. As she was menstruating operation was delayed until May 15th. A central incision about 6 inches long was made with its centre at the umbilicus. The tumour presented itself at the wound directly the peritoneal cavity was opened. It was possible to lift the tumour bodily out of the abdominal cavity, when it was found to be attached to the great omentum, which covered it entirely, by a flattened pedicle about 1 inch wide and several inches in length (joined on to a piece of small intestine), which carried two large arteries and two large veins which were continuous with the vessels of the great omentum. This pedicle was ligatured, cut, and the tumour, which weighed 6½ lb., removed. Beyond a clot of coagulated lymph in the pouch of Douglas and some engorgement of the omental vessels, the contents of the abdominal cavity seemed quite healthy; the uterus, ovaries, and uterine ligaments certainly were so. The wound was closed, the peritoneum being sewn up with continuous catgut sutures and the skin wound with intermittent silkworm gut sutures. The operation lasted 25 minutes. Open ether was administered as the anæsthetic. The patient made a speedy convalescence and was discharged one month after the operation, having gained 1 st. in weight.

The tumour was sharply divided, apparently into two entirely separate zones. The outer cortical one had obviously undergone complete colloidal degeneration, and was soft and gelatinous in consistence. The inner part or medulla of the tumour was hard, white in colour, and friable in parts. The entire tumour was distinctly non-vascular, except for the vessels at and in the pedicle. The Clinical Research Association reported on it microscopically as follows: "The tumour is composed of a connective tissue stroma with cell elements varying in different parts. The general structure is that of a fibroma, undergoing degenerative changes, with large areas of necrosis. There is no evidence that it is a malignant growth."

For the notes and for kind and skilful assistance at the operation I have much pleasure in thanking our resident medical officer, Mr. W. F. Stiell.

Lincoln.

CASE OF FOUR DAYS' STRANGULATED HERNIA IN A CHILD 15 DAYS OLD; RECOVERY.

BY IDA M. GUILLAUME, L.R.C.P. & S. EDIN., L.R.F.P.S. GLASG.,
SENIOR HOUSE SURGEON, CLAYTON HOSPITAL, WAKEFIELD.

A male child aged 15 days, very emaciated and apparently dying, was admitted to Clayton Hospital under the care of Captain J. W. Walker, R.A.M.C. (T.), senior honorary surgeon.

The history obtained was that for four days the child had vomited everything given, had seemed in great pain, and had had no motion for that period in spite of aperients. On admission, the vomiting was frequent and fæcal, and a left irreducible inguinal hernia was found. Captain Walker operated immediately on the child. Under chloroform the sac, which was tightly strangulated, was found to contain large bowel in just good enough condition to be returned to the abdomen. The testicle was found to be gangrenous, probably from pressure, and was removed. The child made an uninterrupted recovery. The interesting points of the case are: The extreme youth of the patient; his moribund condition on admission; the length of time during which, judging by the symptoms, the hernia had been strangulated and the fact that the vomiting was fæcal; and the necessary removal of the testicle. In the circumstances the recovery was very satisfactory.

I am indebted to Captain Walker for permission to publish the case.

Wakefield.

Reviews and Notices of Books.

Physiological Chemistry: A Text-book and Manual for Students.

By ALBERT P. MATHEWS, Ph.D., Professor of Physiological Chemistry, the University of Chicago. Illustrated. London: Baillière, Tindall, and Cox. 1916. Pp. x.-1040. Price 21*s.* net.

THE author expresses the view that his book may raise in the minds of those who read it more questions than it answers. The remark is not inappropriate, as biochemistry is so recent a subject that to few of its fundamental questions can we give an answer. A feature of the work is the citation of definite experiments rather than conclusions only, so that the reader may judge the evidence for himself.

The text of this well-planned volume is divided into three parts. Part I. deals with the chemistry of "Protoplasm and the Cell" (pp. 1–265); Part II. with the "Mammalian Body Considered as a Machine: Its Growth, Maintenance, Energy Transformation, and Waste Substances" (pp. 266–847); and Part III. with "Practical Work and Methods" (pp. 848–1012), which gives an account of the course in physiological chemistry at the University of Chicago. The scheme and details are much on the lines practised in the chemical departments of physiological laboratories in this country. At the end of each chapter will be found a short list of papers—most of them of recent date—bearing on the subject dealt with in that chapter. A commendable feature is the introduction of the derivation of the scientific words used and their meanings. In Part I. the chemistry of the carbohydrates, fats, and proteins, and the physical chemistry of the cell are longer than is usual. Under the term "Lipins" are included fats, oils, waxes, phosphatides, and stereols—a heterogeneous group, both physiologically and chemically—the group designated "Lipoids" in this country. Part II. opens with a short chapter on animal heat, in which ample justice is done to Lavoisier and other

early French observers. In the references we miss the well-known work of Charles Richet, "La Chaleur Animale," which contains a large number of original observations, as well as matters of historical interest. The account of the raw materials of food is short, but perhaps sufficient. Three chapters are given to digestion and a short one to absorption. In the account of the blood —the circulating tissue—the author adopts the view of Wooldridge, and considers the whole blood, the more liquid portions, together with the corpuscles, both red and white, the platelets, and the cells lining the blood-vessels, as consisting of a great mass of living protoplasm. Indeed, the author goes so far as to state that "we shall probably not go far wrong if we consider the blood plasma as a very dilute protoplasm. The processes which occur in it are probably the mirror of the processes which occur in all forms of living matter." In the chapter on the brain and nervous system the author eulogises the work of Thudichum, "a man of extraordinary care, accuracy, insight, and industry, whose abilities were much underrated during his life. There is now, however, no question that he was far in advance of all others in this difficult field." The absence of reserve carbohydrate food in the brain and the entire absence of neutral fat are noted as striking and interesting facts, while the medullary sheath of the nerves may be a reserve food and a nutritive material. In his speculations regarding memory the author suggests "memory hormones." Indeed, "in the spontaneous oxidation of linolinic acid phenomena closely paralleling memory and learning occur." Muscle and connective tissues are dealt with on the usual lines, and a somewhat full account is given of the "cryptorrhetic tissues"—i.e., endocrine glands. A chapter is given to the excretions and one to metabolism of the body considered as a whole, one to protein metabolism, and another to metabolism under various conditions, respiration, and vitamines.

The book as a whole is excellent in matter and agreeably written, with here and there quaint suggestions and comparisons, which help to illuminate the text and suggest new ideas to the reader. Many facts not recorded in Parts I. and II. will be found in Part III., so that in this way an overlapping is avoided. The work should prove most useful to all interested in physiological chemistry.

JOURNALS.

The Philippine Journal of Science. Vol. X. Section B: *Tropical Medicine.* No. 6.—The opening paper of this number deals with certain observations made on the treatment of the skin lesions of leprosy with basic fuchsin by Dr. Oswald E. Denney, of the Cullion leper colony, Philippine Islands. He treated 132 cases with various external leprotic lesions, including ulcers, gangrene, &c., by means of cotton pledgets soaked in 1 in 1000 aqueous solution of basic fuchsin packed into the lesions, and kept in place by gauze bandages. A stronger solution—e.g., 1 in 500—caused a burning sensation, and its use was not continued. The result of the treatment was that of the 132 cases the skin lesions were healed in 67, improved in 46, no improvement was shown in 14, and 5 died. In this series of cases basic fuchsin as an antiseptic proved most satisfactory; as an epithelial and granulation tissue stimulant it brought about repair in many instances which had resisted several other forms of medication. Apart from the slight burning sensation caused by the use of the stronger solutions, neither discomfort nor toxic effects were noted in any case. In consequence of these observations we learn that several hundreds of lepers are now being treated with this remedy daily in the Philippines, and with equally good results. This paper is illustrated by three plates.—Another contribution deals also with the subject of leprosy, and is furnished by Dr. John A. Johnston, of the Bacteriological Laboratory, Bureau of Science, Manila. The writer gives a general account of the history, etiology, and prevention of the disease. He believes that leprosy was imported from Japan to the Philippines. The first leper hospital in Manila was established by the Franciscan Order in 1633. At the present time about 3000 Filipino lepers are interned on the island of Cullion. The author defines leprosy as "an extremely chronic, practically incurable disease."—Dr. Fernando Calderon writes on tropical obstetrical problems, and gives some account of the many superstitions prevalent among the native Filipino population concerning pregnancy and childbirth. When an obstetrical department was established at Manila in 1907 great difficulty was experienced in inducing mothers to come to the institution to be confined, most of them preferring to be delivered in their own dirty and insanitary homes. But gradually the people's confidence has been obtained, and from 1907 to 1914 some 3707 women have been attended in childbirth by the medical officers of the department, with a total of 157 deaths, or 4 per cent. There were 171 abortions. A number of the deaths occurred in the earlier years when many of the cases sent in had been unsuccessfully treated by native methods, and arrived at the institution suffering from injuries already inflicted or in a state of exhaustion which gravely affected their chances of recovery.—Dr. J. S. Coulter contributes a study of the pathology of the gall-bladder and biliary passages in cholera. This observer during 1913 and 1914 examined post mortem 305 cases, 13 of which showed signs of inflammation of the gall-bladder, or about 4 per cent. This percentage is practically the same as that recorded by Major E. D. W. Greig, I.M.S., in his reports upon the subject. This number completes Volume X. of the *Journal*, and accordingly a full index is appended.

The Indian Journal of Medical Research, Vol. III., No. 4.—This number contains 15 articles all of scientific or practical value. The first is by Captain J. Morison, I.M.S., on the Dose of Alum for the Clarification of Water by Precipitation, and gives the results of some experiments with the Poona water-supply, which, it appears, is liable to considerable pollution after every rainfall in the catchment area. The best dose of alum for the perfect clarification of a soft water is obtained, it seems, by adding half the equivalent weight of alum necessary to react completely with the alkalinity calculated as calcium carbonate. For a hard water the same rule holds, but an equally good clarification can be obtained by the use of a smaller dose and a mechanical filter. Captain Morison has devised a method of making a colorimetric estimation of, and hence a check upon, the dose of alum actually used. In this method he employs a solution of logwood, and with doses in excess or in defect he gets a gradation of shades of colour. The clarification obtained by adding the optimum dose of alum is not affected by the turbidity of the water within the wide limits of turbidity found in the Poona water-supply. The paper is illustrated by a coloured plate.—Captain Morison, in conjunction with Captain W. D. Keyworth, I.M.S., also contributes an article on Flies and their Relation to Epidemic Diarrhœa in Poona, and in it the conclusion is arrived at that flies, whatever may happen elsewhere, in spite of their number do not contribute appreciably, if at all, to the mortality in the native city of Poona or to the annual epidemic of gastro-intestinal disease in the Poona cantonment.—Mr. R. S. Cree Brown, professor of engineering in the Poona College of Science, describes an apparatus for the purification of water for troops, illustrated by diagrams, and to this Captain Morison adds a note.—In further continuation of his special studies of cholera, to which he has already devoted so much attention, Major E. D. W. Greig, I.M.S., gives an account of some serological investigations and classification of cholera-like vibrios isolated from the water of tanks, wells, ponds, and river at Calcutta.—Major S. R. Christophers, I.M.S., and Sub-Assistant Surgeon Rai Sahib Khazan Chand (of the Central Malaria Bureau, Kasauli) describe a tree-hole-breeding anopheles from Southern India, A. (cœlodiazesis) culiciformis, Cogill, with an illustrative plate.—Major W. F. Harvey, I.M.S., director of the Central Research Institute, Kasauli, writes on the Measurement of the Degree of Agglutination of Bacteria. He is of opinion that the degree of agglutination produced by a serum can be satisfactorily measured by using a suspension which has been standardised by weighing the bacterial substance and suspending it in unit volume of fluid. The degree of agglutination is most delicately determined by using time as a measure instead of dilution of serum. The test is greatly refined by using a heavy suspension, with distilled water as menstruum and diluent, and by separation of the stages of occurrence of agglutination. The modified test is said to be rapid, simple, delicate, and definite.—Major Harvey also contributes two other articles—namely, a note on vaccination, and some remarks on the investigation of an epidemic.—In a highly technical paper Major A. McKendrick, I.M.S., director of the Pasteur Institute of India, discusses the Applications of the Kinetic Theory of Gases to Vital Phenomena. This paper, which is

illustrated by diagrams, was read before the Physical Section of the Indian Science Congress at Lucknow.—A contribution to the study of kala-azar is furnished by Lieutenant-Colonel J. W. Cornwall, I.M.S., in association with Military Assistant Surgeon H. M. La Frenais, illustrated by several plates. These experts found that Leishmania flagellates can survive in the bug for at least 29 days, and they suggest the possibility that a hitherto undescribed phase of the parasite of kala-azar may occur in the bug's stomach. They found, however, little to support the view that this disease is transmitted directly by the bug to man, but the subject is being further investigated.—Colonel Cornwall, in conjunction with Sub-Assistant Surgeon S. Ramasamy Aiyar, of the Pasteur Institute of Southern India, discusses the subject of Arneth's index in laboratory rabies.—Dr. Vishnu T. Korke writes on a nosema (Nosema pulicis, N.S.) parasitic in the dog-flea (Ctenocephalus felis), illustrated by a plate.—A contribution to the study of hæmoprotozoa in Portuguese India is supplied jointly by Captain Froilano de Mello, professor at the Medical College of Nova Goa, and Dr. L. J. Braz de Sa, assistant in the bacteriological laboratory at Nova Goa. This paper is illustrated by a coloured plate.—A report is published from the Kitchener Indian Hospital at Brighton on Pyorrhœa Alveolaris and Associated Conditions among Indians and Europeans. In it an interesting account is given of the inquiry carried out by a committee of five members, four of whom were officers of the Indian Medical Service, with whom was associated Mr. H. L. Dorrell, dental surgeon to the hospital.—The last contribution is furnished by two civil assistant surgeons—namely, M. Kesava Pai, M.D., and S. Rama Krishnan, L.M.S.—on the Differentiation of Dysentery Bacilli by their Agglutination Reactions.—This number completes the third volume of the *Journal*, and accordingly an index of authors and another of subjects is appended.

NATIONAL INSURANCE ACT.

A Panel Practitioner and Service Outside his Area.

A SUCCESSFUL claim for fees was made in the Liverpool county court recently in somewhat unusual circumstances. Mr. M. R. Maher sued the widow and administratrix of the late Mr. S. J. Bland for £13 3*s.* 6*d.*, on account of medical attendance upon her in 1913. The services claimed for were rendered before the husband died, and the debt was disputed on the ground that as Mr. Maher was Mrs. Bland's panel doctor he could not charge for attending her. It was also denied that any special arrangement for his attendance, as alleged by him, had ever been made. The plaintiff's case, however, was that after he had been in attendance on Mrs. Bland it was found that a serious operation was necessary, and she was removed to a nursing home for that purpose, the proposal that she should go into a public hospital at Liverpool being rejected. In these circumstances Mr. Maher was specially requested by the husband to attend her at the nursing home, and he accordingly did so, three operations being performed on different dates. The nursing home was at Waterloo, at some distance from the plaintiff's residence and practice, and he was particularly told by the husband to spare no expense. This, as has been stated above, was denied by witnesses on behalf of the defendant. His honour Judge Thomas, however, held that it was unreasonable to suppose that Mr. Maher would undertake to attend Mrs. Bland at Waterloo unless he were to be paid for going so far from home. He considered that the plaintiff was entitled to charge for his visits to Waterloo but not for attendance before the patient went there, and that he was not entitled to charge attendance fees at Waterloo as well as fees for the operations. He gave judgment for the plaintiff for £9 0*s.* 6*d.* with costs.

Panel Practitioners and the Military Service Act in London.

At a meeting of the Local Medical and Panel Committees for London held on July 18th a report was considered from the committee appointed to confer with the Insurance Committee on the position of panel practitioners under the provisions of the Military Service Act, 1916. The attention of the Committee had been specially directed to the list of practitioners liable to be selected for commissions in the Royal Army Medical Corps on August 7th. The majority of these, it was found, would be able to make satisfactory arrangements for their patients if it should become necessary for them to do so, but in other instances, reduced eventually to 36 names, considerable difficulty would be experienced. These 36 names, together with the reasons why they should be retained in civil practice, have accordingly been forwarded to the Commissioners, who will make the necessary representations to the military authorities. The chief point to which the Committee directed its attention was the difficulty, varying according to the district, of obtaining full-time deputies or of securing the whole-hearted coöperation of non-panel practitioners in undertaking the obligations of panel practitioners called up for service. Special consideration should, the Committee thinks, be given to areas in which in normal times all or most of the practitioners are on the panel, these being as a rule densely populated districts. A substantial number of practitioners from such areas are already serving, and further depletion of the ranks of panel practitioners must seriously affect the efficiency of the medical service provided.

Panel Practitioners and the Report of the Royal Commission on Venereal Diseases.

The report of the special subcommittee appointed to deal with the above report was also in the agenda of the recent meeting of the Local Medical and Panel Committees for London. Many of the points which engaged the subcommittee's consideration naturally affect other practitioners equally with those engaged in panel practice, and the importance of the subject dealt with claims the attention of all. The difficulties to which the report in question draws particular attention are those arising out of the Commission's recommendation (9) that institutional treatment should, as far as possible, be provided at general hospitals. It is feared that patients will select a hospital for treatment in preference to going to their own medical attendants or to private practitioners, in order to secure themselves from the observation of their friends. Recommendation (10) runs: "Treatment in any institution included in a local authority's scheme should be free to all. There should be no refusal to treat a patient who is unwilling to go to his own doctor." In this connexion it is pointed out in the subcommittee's report that two points will have to be weighed carefully. First, the ethical question of how far a practitioner, whether on the staff of an institution (and so not pecuniarily interested) or not, should undertake the treatment of another practitioner's patient before such patient has given notice to his original attendant. Secondly, the question of how far the treatment of a patient in a hospital, and without payment, is to be justified when the patient can secure for himself adequate treatment from a private practitioner. Recommendation (12) again arises out of the desire that patients suffering from venereal diseases should be able to obtain treatment in hospitals, with the apparent implication that venereal diseases are to be placed upon a different basis from other illness. This recommendation runs: "Special arrangements, such as evening clinics, should be made for the treatment of out-patients at hours convenient to the working classes." It is pointed out here that evening clinics at general hospitals cannot fail to be regarded with anxiety by private practitioners in the neighbourhood. These clinics also, if open only to venereal cases, will mark out as such those who seek treatment at them, and surreptitious attendance will be necessary on the part of patients who wish their friends not to know of their condition. If, on the other hand, evening clinics are opened to include all kinds of disease, the competition with practitioners in the neighbourhood will become even more severe, and the abuse of hospital treatment more frequent. The report suggests that the chief value of special hospital clinics will be in the provision of opportunities for medical practitioners to bring or send difficult cases for consultative advice, and that in fixing the time there should be consideration for the convenience of the practitioner should he desire to attend.

FREE TRAINING TO BELGIAN DOCTORS.—We understand from the Dean of the University of Liverpool that instruction in tropical medicine is being offered free of charge to Belgian doctors in this country by the Liverpool School of Tropical Medicine.

THE LANCET.

LONDON: SATURDAY, JULY 29, 1916.

Science and the Drink Question.

THE neglect of science by the State is one of the commonplaces of current thought. It is said, and in too many instances no doubt with perfect truth, that in this country the governing classes, or at all events our legislators and politicians, fail very generally to recognise the importance of science in modern life, and that they are unable or unwilling to appreciate at its proper value the assistance which the scientifically trained intelligence can give in the organisation of society and in the solution of social problems. Though in the main this indictment is quite true, it is certain that the blame lies not wholly with those to whom such censures are usually addressed, but that, on the contrary, some part of the responsibility should be imputed to the indifference of scientific critics to many questions of practical social interest—an indifference which prevents them from furnishing, as it should be their privilege and duty to furnish, the positive data needed for the passing of adequate measures of reform. That this has been the case in the particular instance of the drink problem would appear to be the moral enforced in the extremely interesting address recently delivered before the Society for the Study of Inebriety by the chairman of the Central Control Board (Liquor Traffic).

Lord D'ABERNON, in commenting on the relatively small results that have hitherto attended the efforts of legislators and reformers to abate the social evils of alcoholism, indicated as one of the chief causes of failure the absence of exact data regarding the fundamental factors of the problems of inebriety. As he pointed out, certain aspects of the physiological action of alcohol have been the object of most careful and exhaustive investigation. The problem of its food value has been settled, so far, at all events, as it can be settled in the present state of physiological knowledge. Much valuable work has been done with regard to the effect of alcoholic beverages on the activity of the digestive ferments, and numerous and important researches have been carried out to determine the influence of alcohol on the output of muscular energy. But when we come to consider its inebriating action and to inquire into the conditions which underlie the excessive use of alcohol and create the social evils of intemperance—we pass in a depressing way out of the region of scientific evidence. To illustrate this point Lord D'ABERNON cited a formidable list of lacunæ in our knowledge, many of these lacunæ referring, it may be noted, to matters which are of obvious practical importance in the devising of measures for the arrest of intemperance. Thus, he observed, we have no reliable test of drunkenness; we have no positive data as to the effect of alcohol at various strengths and various degrees of dilution; we have no evidence regarding differences in the inebriating action of the several alcoholic beverages; no evidence as to whether alcoholic excess may not be related in certain cases to an abnormal need of fluid, quite irrespective of its alcoholic content. It was Lord D'ABERNON'S complaint that on these and many other points his demands for information remained unanswered; there were statements of opinion, and very positive and dogmatic statements at that, but there were no data that could possibly be regarded as scientifically sound. At first sight this seems a startling and even an improbable assertion, but further scrutiny of the facts compels the admission, humiliating though it is, that the complaint is completely justified. The scientific literature of "the drink question," or, to speak more accurately, the literature which purports to be scientific, has unfortunately taken little account of such matters as we have referred to; for the most part it does not concern itself at all with facts of observation or experiment, and its spirit and method are rarely the spirit and method of positive science. The inebriety which it discusses, and discusses assuredly with much dialectical skill and ingenuity, is not the inebriety of common everyday experience—it is a product of deduction working on the hypothesis, assumed as axiomatically true, that the habit of alcoholic excess is always and everywhere the result of an innate specific craving for the sensations of drunkenness. To the practical inquirer, seeking for definite evidence on which to base effective remedial measures, this *a priori* speculation can obviously be of little use; and, as the results of legislative experiments in this matter should warn us, the attempt to apply conclusions, based on these very insecure premises, to the solution of the problems of alcoholism in any of its aspects, is not likely to be attended by conspicuous success. Fortunately we may feel certain that errors of this sort will not be repeated; the spirit which has been shown in the policy of the Central Control Board under the enlightened administration of Lord D'ABERNON gives full assurance that future legislation with regard to this question will be guided by principles of a less speculative nature and by knowledge more nearly connected with the real facts of the general issues. We have, indeed, already concrete evidence of the influence of this new spirit in the cautious and reasoned measures adopted by the Control Board with a view to decreasing chronic alcoholism. As Lord D'ABERNON points out, it has been established on definite evidence that the chronic poisoning, to which the more serious evils of intemperance are mainly due, is largely the result of the use of alcohol at frequent intervals throughout the working day, and it has, therefore, been one of the cardinal principles of the Control Board's policy to frame its restriction orders so as to break down this habit and tradition of industrial drinking. How has this policy worked? For

statistical purposes the most definite and reliable index of chronic alcoholism which we possess is the incidence of delirium tremens, and, since a large and stable proportion of all cases of the disease were under treatment in Poor-law infirmaries and prisons, the records obtainable from these two classes of institutions should give clear evidence of the results of the restriction orders as regards the prevalence of chronic intoxication. And the evidence, on the figures quoted by Lord D'ABERNON, is certainly impressive. As a typical instance he takes the East London and Woolwich area; in this district the number of cases of delirium tremens treated in the infirmaries during the five months following the introduction of restriction orders amounted to 59, as compared with 109 in the corresponding period of 1915 and with 87 in 1914—and this reduction was even more marked and more regular in the females than in males, a strong suggestion that it is not to be attributed to the withdrawal from the civil population of men of military age. This result, and it is paralleled in other districts, is a very striking illustration of the degree in which alcoholism can be influenced by legislative measures, if only these measures are based on a foundation of real knowledge.

With such encouraging omens as we may find in the spirit and in the matter of Lord D'ABERNON'S address, we may reasonably hope that the biological factors which are fundamental in the problems of alcoholism will be the object of more serious and thorough observation than has been devoted to them in the past. In regard to this question in a very special degree the war has had an excellent educative effect on public opinion, and it may safely be asserted that there is at the present moment a general readiness, such as has never prevailed before, to acquiesce in any reasonable scheme for thorough and effective treatment. If this opportunity is to be fully utilised, and if the energy and goodwill that are now available for the work of reform are not to be frittered away in confused and futile effort, it is vitally necessary that the way for successful action shall be immediately prepared by a scientific and impartial study of the root facts.

Heat-Stroke.

THE European in the tropics, especially if newly arrived there, is liable to suffer in two ways from the climatic conditions of the hot season. In the one case, heat-stroke, the temperature of the body rises and there are signs of congestion and nervous irritation; in the other, heat exhaustion, there are pallor, fainting, and collapse. Heat-stroke is the commoner form. Although sometimes caused by the direct rays of the sun, especially where the new-comer is unsuitably clad, it is much more frequently produced by the combination of high temperature and excessive moisture in a confined space. The risk is not great in the ordinary circumstances of life in the tropics, for most people are careful to protect themselves when out of doors and to adopt special arrangements for cooling and keeping in motion the air of their dwellings, and this motion is a potent factor in removing heat from the body. The liability to heat-stroke is very much greater in those who are in an exhausted state, whether due to overwork, fatigue, or illness, and such subjects are readily affected by a short exposure to unfavourable conditions. Even strong and healthy people succumb if subjected for a considerable time to air which is both hot and stagnant, especially if it is also impure and moist. The conditions met with in the engine-rooms of vessels passing through the Red Sea at certain seasons of the year exactly exemplify the most dangerous air, and these conditions require the most careful attention to ventilation and to the escape of steam if tragedy is to be avoided. It has been experimentally shown by Dr. J. S. HALDANE that if the wet-bulb temperature exceeds 89° F. in still air the body temperature begins to rise, and that the same effect is produced in moving air when the wet-bulb reading approaches the body temperature.

Attention has been called to these conditions by the lamentable death, attributed to heat-stroke, of Sir VICTOR HORSLEY in Mesopotamia, and by the disaster to a trainload of soldiers in India. It appears from the official account that some Territorial drafts, amounting to 1013 men with 13 officers, arrived at Karachi in the first week of June and were there entrained for Lahore and Rawal Pindi in third-class carriages. The train carried three medical officers, had two second-class carriages fitted up as hospitals with fans, and was supplied with a coffee-shop and a good quantity of ice. Thirty men were seated in carriages designed to accommodate 36, and 60 men in others which had a normal capacity of 72. Notwithstanding these arrangements, there occurred on the journey 136 cases of heat-stroke, with 15 deaths. It is not stated whether the medical officers, like the soldiers they were accompanying, were new to the country, and had no special experience of the climatic conditions to which the men under their charge were likely to be subjected. Fortunately, at Lahore and Rawal Pindi a large number of medical men were available experienced in this tropical affection, and it may probably be attributed to this cause, and to the fact that ice had been provided on the way at different stations, that out of the 104 cases in the later stages of the journey there were only 3 deaths, against 32 cases with 12 deaths in the earlier. Certain incidents connected with the unfortunate journey are difficult to understand. Anyone familiar with the railway journey across the plains of India in May or June knows the distressing conditions under which it is made, even in first-class carriages, accommodating only four persons in each, supplied with ample quantities of ice and iced water, and having additional cooling and freshening of the air provided by fans and tatties. Even so the ordeal may be grave for a European. In moving European troops at this season special precautions ought to be taken to protect the roofs of carriages from the effects of direct heat of the sun, and to avoid overcrowding.

Science and experience can suggest much to lessen the heat inside the carriages themselves. Such would be the normal preparation in India for the transport of troops under the supervision of men familiar with the conditions to be incurred. In cool weather 30 occupants to a third-class carriage might not give rise to discomfort; but under conditions in which every soldier is giving off aqueous vapour at a rate of some 20 cubic feet per hour, while the air is stagnant, the wet-bulb thermometer would easily rise to a dangerous point. The natives of India, who normally travel in third-class carriages, are accustomed to the heat and wear fewer and lighter clothes; the fact that natives might with impunity have made the arduous transit cannot be used as an argument when we are considering the case of British soldiers in uniform. The unusual circumstances of this journey have been marked by the fact that on July 7th a senior officer from Army Headquarters, in company with Lieutenant-Colonel W. MOLESWORTH, I.M.S., left Simla for Karachi with instructions to visit all the stations along the line where fatalities had occurred, and to submit a full report after their return to Simla.

The amount of the mischief done may not be measured by the deaths alone, inasmuch as many of the soldiers attacked will be likely to suffer from a more or less permanent disability. It is clear that the circumstances should be made known without reserve. We are glad to learn that Mr. AUSTEN CHAMBERLAIN, Secretary of State for India, has directed the Government of India, that having fixed the responsibility for the tragedy, they are to hold the person or persons responsible to strict account.

Annotations.

"Ne quid nimis."

SIR WILLIAM RAMSAY.

PHYSICAL as well as chemical science has sustained a great loss in the death of Sir William Ramsay, which took place on July 23rd, in his 64th year. His career in the field of research was brilliant; if he is remembered mostly for his extraordinary attention to details and for a refinement of manipulative skill and attack which led to his important discoveries, it will also be seen that those discoveries were of vast significance. All along the conviction that there was value in ascertaining the nature of traces or residues was his guiding principle, and it led him aright. When we reflect that Sir William Ramsay with Lord Rayleigh made the simple observation independently that the nitrogen of the air was slightly heavier than the nitrogen obtained by chemical means, which ultimately led to the discovery of argon and its congeners krypton, neon, and xenon, we must agree as to the importance of examining comparatively minute quantities. In reality these investigators were but pursuing the sequence of the classic experiment of Cavendish, who found that when air was sparked there was always a small residue of gas which refused to disappear in the electric discharge in the presence of oxygen—refused, in fact, to be burnt. This residue contained the inert gases which Sir William Ramsay separated and identified. The importance of the infinitesimal was being exemplified at the same time by the discovery of radium in pitchblende by Madame Curie. She worked on tons of material in order to recover a grain or two of the substance radium, the isolation of which has completely revolutionised our ideas of energy and matter. These investigations were being conducted simultaneously and their concurrence led to very remarkable developments. Sir William Ramsay was not long in realising that the study of radium and its behaviour was likely to lead to further light being thrown on the nature of things, and to him largely we owe the conception of the degradation of elements. He demonstrated how radium's instability meant that it was constantly disappearing as such and appearing again in new elemental form. He mapped out the series of elements which succeeded the degradation of radium, and amongst others he proved the formation of helium. This was curious, as Sir William Ramsay was the discoverer of terrestrial helium. He had found it amongst the gases given off from a mineral called cleveite, and he showed that it exhibited the same powerful yellow line in the spectrum corresponding exactly with the line hitherto only known to exist in the solar spectrum. Sir William Ramsay now became absorbed in the study of disintegration, and many of his colleagues think that the intense enthusiasm which he manifested towards this work undermined his physical strength. He may well be forgiven for his ardent attachment to these questions, for their investigation gave promise of establishing once and for all that the elements were merely modifications of one great family substance, and that, given the means, one element could be transmuted into another. As a matter of fact, the degradation of radium itself had already made out a case, but Sir William Ramsay evinced a great desire to show that the same phenomenon could be demonstrated with more familiar things. He reported once that in working with a copper salt under the stimulus of radium traces of lithium had appeared. The matter was never cleared up and no further contribution by way of confirmation or disproof was forthcoming, but in 1913 an announcement was made by two investigators, who were working quite independently of each other, that they had achieved clearly and definitely an example of the transmutation of elements. Hydrogen gas was introduced in small quantity into an X ray bulb and a rapid and continuous discharge was allowed to pass when both helium and neon, it was stated, made their appearance. The result, though again not since confirmed, was received with the greatest interest by Sir William Ramsay, who expressed his gratification that the theory of transmutation no longer rested for support on his word. His work on radio-activity received a medical application. He undertook an exhaustive investigation into the properties of Bath waters, and successfully demonstrated that the one thing which distinguished these waters in particular was their remarkable radio-active power. He could attach no therapeutic significance to the mere mineral constituents of the waters, which were much the same in kind and degree as those found in the London drinking-supply. Later he pointed out in a paper contributed to our columns that the application of radium for therapeutic purposes was more effective in the shape of emanation or of niton than

as a salt of radium, on the ground that in the latter case there is considerable risk of loss of the precious radium. He described in this paper the introduction of niton into appropriate forms of apparatus—e.g., tubes, bulbs, and hollow flat discs—suitable for application. We have said enough to show Sir William Ramsay's great endowments and wide range of scientific equipment. He possessed a charming personality, and was extremely popular at University College, London, where he occupied the chair of chemistry from 1887 until 1913, and those who attended his lectures will ever remember his wonderfully lucid treatment of his subject. He had remarkable attainments in other directions, for he could deliver a lecture to either a German or French audience fluently in their own tongue, he was a gifted exponent of music and played both the piano and violin in delightful style. His death, at a comparatively early age, is a great loss both to science and society.

THE WAR AND ITS EFFECT UPON THE YOUNG.

A CIRCULAR letter sent by the Home Office to the clerks to the justices throughout the country draws attention to a substantial increase in juvenile crime as shown by the police statistics of 17 of our largest towns. In the areas selected the total number of children and young persons charged with punishable offences in the three months December–February, 1914–15, was 2686, and in the same period, 1915–16, was 3596, an increase being noted in all the towns consulted. Moreover, and this is perhaps the most serious feature of the case, although there have been more charges of assault, malicious damage, gaming, and offences against the Education Act, the increased number of juvenile offenders is mainly caused by a rise of nearly 50 per cent. in charges of larceny. It would indeed be deplorable if the standard of honesty among the young were to be seriously and permanently lowered at a time when their fathers and their brothers, many of the latter being little older than the culprits, are setting an example of bravery, self-denial, and self-sacrifice on the field of battle. In the circumstances, the Home Office rightly urges magistrates to do what they can to prevent adding to the criminal classes any who can be saved by the exercise of the powers of the bench under the Probation of Offenders Act, and reminds those who sit in judgment upon the young that parents may be made pecuniarily liable unless it is clear that no neglect on their part has conduced to the commission of the offence. Other matters of detail are also touched upon, such as the powers of magistrates to fine for carrying a gun without a licence boys who play with air-guns, and to check the use of automatic gaming machines. Observations are also made as to the influence of cinema shows—indeed, the whole question of these entertainments is under consideration. It is clear that the loss of the restraining influence of parents who are fighting for their country or closely engaged in factories producing munitions is being felt to an appreciable extent in populous centres, so that in various respects we must hold the war responsible for lack of discipline among the younger members of the community. This is a position which it will require much energy and tact to combat. The circular letter of the Home Office suggests the employment of an increased number of female probation officers, but a doubt may be expressed as to whether women experienced in social work and ready to undertake new functions may not at the present juncture be almost as difficult to discover as men. Again, reference is made to the breaking up of boys' clubs through the lack of managing staffs as being responsible for much mischief. Here again women and others, more or less new to the work, might help if they could be found disengaged. It will not be easy to obtain them, but our readers will do the country a service if they can recruit unoccupied persons of the right sort. It is too much to say that all of those whose energy, goodwill, and opportunity enable them to "do something" for their country's sake are doing it already. There are unoccupied hands and brains among us, and the time for which their work will be needed is short. For in the near future we pin our faith upon the young soldiers who will return to set an example and to take up the good work. They will find their influence doubled by the hero-worship with which they will be regarded, and their increased knowledge of the benefits derived from honourable discipline will stand them in good stead.

AN IDEAL MECHANICAL HAND.

WE learn from the Société Nationale de Chirurgie de Paris that an anonymous donor has offered to the society a prize of 50,000 francs, to be handed over to the maker of the mechanical apparatus which best supplies the place of the hand. The conditions laid down are as follows: "All competitors must belong to allied or neutral nations. They are to present to the society mutilated men who have been using their apparatus for at least six months. The Société de Chirurgie will experiment with each apparatus on mutilated men for the length of time it thinks fit. The apparatus rewarded is to remain the property of its inventor. The competition will be closed two years after the end of the war." MM. Faure, Kirmisson, Quénu, Rieffel, and Rochard form the committee selected by the society to deal with the competition, and those wishing to compete should send the apparatus and description to the Secretary-General of the Société Nationale de Chirurgie, 12, Rue de Seine, Paris.

ANTHRAX AND POSSIBLE PRECAUTIONS.

AT a recent inquest held by Dr. F. J. Waldo, coroner of Southwark, upon the body of a waterside labourer it was proved that the man had died of cutaneous anthrax contracted in the course of his work in a warehouse where wool from Persia and China was handled. The evidence also showed that on the wool-floor where the deceased worked, as at the wharf with which the warehouse was connected, there was general ignorance among those employed both with regard to the possibility of infection with anthrax from the wool and to the nature of the disease. Dr. Waldo, with invariable readiness to seize the opportunity for making a useful recommendation, explained the matter to the jury, with the aid of the facts before them and of the explanations given by the expert witnesses called. As a result the following rider was appended to the verdict:—

We (the jury) think that the provisions of the Factory and Workshop Acts should be extended—or enlarged—so as to apply to the wharves and warehouses and other places where foreign or suspect wool, hides, skins, horse and goat hair, pigs' bristles, and other material liable to be infected with anthrax are handled and dealt with; and that the excellent preventive regulations, including placards in picture form—issued by the Home Office—should be compulsorily exhibited

and enforced for the information and well-being of workers in such wharves and warehouses.

Nearly two years ago, in December, 1914, an inquest was held at Southwark by Dr. Waldo on the body of a butcher who had died from cutaneous anthrax in Guy's Hospital, when the jury added the following rider to their verdict:—

> We (the jury) recommend that anthrax should be universally (not only in London, but at Croydon, Mitcham, and many other districts throughout the country, including Bradford and the West Riding of Yorkshire—the chief seat of the wool trade) placed on the list of dangerous infectious diseases compulsorily notifiable by medical men in attendance on such cases, to the medical officer of health of the district in which the patient was under treatment; and, secondly, that all deaths from anthrax should be reported compulsorily to the coroner in whose district the body lies.

Dr. T. M. Legge, chief medical inspector of factories, stated in his evidence at the more recent inquest that his work was confined to factories and workshops, but that the reporting of cases of anthrax occurring in warehouses could only be "encouraged." He said: "Their medical officer is obliged to report to me only if the disease is contracted in a factory or workshop, but not in warehouses, except in the County of London. The occupier also has to report to the district inspector of factories and to the certifying surgeon of factories and workshops, but not warehouses, which may escape altogether." He further expressed the opinion that it would be most useful to hold inquests upon deaths by anthrax as an effective way of calling attention to the danger and as a means of prevention. Dr. Legge bore witness also to the usefulness of illustrated warnings, hung where workmen constantly have them before their eyes, in order to secure prompt recognition of pimples likely to be those associated with the disease. Recently the attention of the Home Office has been called to the opinions expressed by the juries in the two cases above referred to, and the matter is not likely to be overlooked. A Departmental Committee is considering the subject of anthrax in connexion with the wool industry, and its recommendations will, no doubt, take into account the state of affairs which the two inquests held by Dr. Waldo have shown to exist. The number of workmen who suffer in the course of the year from anthrax poisoning may not be large, but it is right and reasonable that the fullest possible protection should be given to all likely to be exposed to so deadly a disease. Prevention and the earliest possible notification to all concerned are the objects aimed at by the Factory and Workshop Acts, and it is desirable that they should be hampered as little as possible by technical limitations as to the precise buildings or industries governed by them. Meanwhile, the duties of medical practitioners who may find themselves in attendance upon cases of anthrax contracted in a factory or workshop are laid down in Section 73 of the Factory and Workshop Act, 1901.

CHILD WELFARE.

THE effect of the war in diminishing the personnel of the school medical services may become serious. We learn from a statement by Mr. Arthur Henderson the President of the Board of Education, that down to March, 1915, there were 850 school medical officers, of whom no less than 300 have now joined the military services. This being the case, it is more important than ever that the work dealing with maternity and infant care in general should be so perfectly coördinated as not to result in overlapping or the waste of public money. In this connexion attention may be called to an article by Miss Annie E. Barnes,[1] secretary of the Child Welfare Enquiry Office, in which it is urged that the time has come for the adoption by all local health authorities of a definite scheme for infant welfare, and that this scheme should include under one efficient controlling force all the efforts for the promotion of the well-being of mothers and young children. Miss Barnes points out that at present it is possible for half the efforts in these directions to be provided by the health authority of the district and to receive their grants from the Local Government Board, while the remainder may be provided by voluntary means and receive their grants from the Board of Education. Mr. Henderson stated that the school medical services included not only medical inspection of school children, but the treatment of certain affections of the throat, eyes, ears, and skin, and that there were now in existence 350 school clinics. We agree with Miss Barnes that the institutions which are an integral part of the general work of reducing infant mortality should be under the supervision of the health rather than the education authority, and so be brought into the general plan of campaign.

PAYMENT FOR CERTIFICATION IN IRELAND.

WHEN an agreement was arrived at between the medical profession and the Irish Insurance Commissioners last December as to a scheme for the certification of insured persons one point was left over for discussion when some experience of the scheme would have been gained. A conference was held recently to deal with this reserved question—namely, the method of distribution of the Treasury grant—and the Irish Medical Committee decided to accept the proposal of the Commissioners. Each insurance area is to have its own pool of funds which are to be divided among the several medical men certifying according to the work done by each. The method of calculating the work done is ingenious, if a little complicated. The unit will be a certificate, but each initial and each final certificate will count as one and a half; certain other special certificates will count as two. Before proceeding to distribute the pool the Commissioners will count the average number of certificates per case issued by each certifier, and a deduction will be made from the number of each certifier who has issued more than what is found to be the average number of certificates per case for the particular area.

A NATIONAL SCHEME OF PHYSICAL TRAINING.

A COURSE of lectures on a national scheme for physical training has recently been delivered in Manchester. The scheme includes the protection of infant life by the institution of day nurseries. Major R. Tait McKenzie, R.A.M.C., professor of physical education in the University of Pennsylvania, spoke on the necessity for a national scheme of physical education. He urged that the physique of most of the recruits whom he saw in training for the Army during the summer had been allowed to take care of itself. If they had entered upon training with a soundly developed body, their chances of survival in the

[1] Englishwoman, July, 1916.

field would have been greatly increased. That they had risen to the emergency as well as they did was a tribute to their spirit and courage, but it took more than moral stamina to endure the long march with a heavy pack, to hold the rifle with a steady arm, and to discharge their other militant duties. Major McKenzie contended that it was simply committing national suicide to neglect the complete education of every child's physical powers at the present time. Dr. Barbara Tschaikowsky, in an address on infant welfare, made a strong appeal on behalf of infant life, based on the obvious lessons taught by the war. At a later meeting promoted by the Manchester and Salford Council for Day Nurseries and Nursery Schools it was stated that the council was considering two schemes—one, in which the coöperation of employers will be sought, for temporary day nurseries or "war nurseries," situated near works where numbers of married women are employed, and another for the establishment of permanent day nurseries, to be combined, whenever possible, with nursing schools.

THE COCAINE HABIT.

UNTIL the war there does not appear to have been any substantial increase in the addiction to cocaine in this country, and the recent introduction of the habit among our troops is probably correctly attributed to the Canadians, whose example has been followed at first out of mere curiosity. In the ranks cocaine is usually taken in the form of snuff, known as "snow," and the hypodermic method is not often used. The victims of the habit allege that cocaine is taken to replace alcohol when that is unobtainable in sufficient quantities, or, if taken in the desired amount, would lead to punishment. It is well known that drug habitués ring the changes for various causes between alcohol, morphia, opium, and cocaine, sometimes doubtless in the hope of breaking a habit, at other times because the particular poison desired is unobtainable. The cocaine habit is largely prevalent in various parts of America, and has more recently invaded India. Now that the practice has been introduced among our young men there is a grave risk that the habit will spread, especially if the sale of liquor continues to be restricted, unless there are stringent precautions taken to stop the sale of the drug.

THE medical profession has sustained a severe loss in the death at sea on July 17th, of Dr. Arthur Hugh Lister, C.M.G., physician to the Aberdeen Royal Infirmary. Lieutenant-Colonel Lister was returning from Alexandria where he was in medical charge of the 19th General Hospital.

THE death from wounds was announced last week of Mr. R. W. Michell, Captain, R.A.M.C. (T.), M.D. Cantab., F.R.C.S. Eng. He was equally well known in scientific and athletic circles, and his death will cause a sense of personal loss to a very large circle of Cambridge friends.

THE death is announced, in his 82nd year, of Mr. Thomas James Walker, M.D. Lond., F.R.C.S. Eng., V.D., consulting surgeon to the Peterborough Infirmary, and one of the most widely known practitioners in the provinces.

A SERIOUS DEFECT IN SOME OF THE REGISTERED HOSPITALS FOR THE INSANE.

BY HENRY RAYNER, M.D. ABERD.

THE registered hospitals for the insane rank amongst the finest of English charitable institutions. Their admirable and successful management is vouched for by the favourable reports of the Commissioners in Lunacy for many years past, and it would be difficult to praise too highly the medical treatment of the patients committed to their care. In one point only do they appear to fall short of the work which they were intended to fulfil, but that is one of a most serious and vital character, to which the attention of the public and of the boards of management of these institutions should be promptly given if they are to be prevented from departing still further from the object for which they were primarily founded—viz., the charitable assistance of persons of the educated class suffering from mental disorder.

The Commissioners in Lunacy have on more than one occasion drawn attention to the small amount of charitable assistance afforded by these institutions, and in the first report of the Board of Control (for the year 1914), recently issued, there are the following paragraphs:—

> The registered hospitals still continue to be conducted on good lines and in an enlightened manner, and, as heretofore, they form a very important feature in the lunacy administration of the country. ..... It is, however, necessary to repeat the admonition that as these institutions were originally founded upon a charitable basis, as large a proportion of cases, upon unremunerative terms, should be received as is consistent with the reasonable financial stability of the hospitals, and that the latter should not degenerate into luxurious homes for wealthy patients, only or principally for them.

In the entries made by the members of the Board of Control at their visits to ten of the principal registered hospitals there is a record of the percentage of patients received in each: (1) free of all payment; (2) on weekly payments of less than 10*s.*; (3) of from 10*s.* to 21*s.*; (4) from 21*s.* to 42*s.*; and (5) from 42*s.* upwards.

From the data thus given it appears that in the six more costly asylums whose weekly rates ranged from £3 7*s.* 7*d.* to £1 18*s.* 3*d.*, having an income from patients' payments of over £286,000, a total of less than 14 patients were received without payment, 58·1 under 10*s.* per week, and 149·96 at from 10*s.* to 21*s.* out of a total of 1622 patients, whilst in the four hospitals whose rates vary from £1 15*s.* 4*d.* to £1 6*s.* 7*d.* weekly, with an income from patients of £40,887, 19·93 were received without payment, 23·73 under 10*s.*, and 192·84 at from 10*s.* to 21*s.* in a total of 534. The total incomes from all sources in the two groups approximate to £300,000 and £50,000, and the average of the rate of maintenance is £2 14*s.* 8*d.* and £1 11*s.* 10*d.* respectively per hospital. In tabular form and discarding fractions the actual charitable assistance in the two groups is:—

	No payment.	Under 10*s.*	10*s.* to 21*s.*
1st group ...	14 patients ...	58 patients ...	150 patients.
2nd ,, ...	20 ,, ...	24 ,, ...	193 ,,

From these data it may be gleaned that the hospitals having the lower rate of expenditure do a very large amount of charitable work in the number of persons assisted, equal, at least in this respect, to their more wealthy brethren, and in relation to income nearly six times as much. They show that even with small means much may be done.

The hospitals with the high rate of maintenance might put forward the plea that all patients, received on payments under the weekly maintenance rate, were charitably assisted to the extent of the difference between this and their actual payments; for example, that in a hospital with a weekly rate of maintenance of £3, a patient paying nothing would be benefited to the extent of £3 per week, and one paying £2 10*s.* to the extent of 10*s.* per week. This, however, is an unsound way of looking at it. In the first place, a patient able to pay £2 10*s.* ought not to need charity, being able to obtain perfectly satisfactory care (as seen in the second group of hospitals) for an average of £1 11*s.* 10*d.* per week, and even less than this in the private annexes of county institutions. But they do not obtain the full value of the higher rate of maintenance, since the highly paying patients, paying perhaps as much

as 8 and even 12 guineas per week, may cost actually 6 or 9 guineas per week, if they get fair value for their money. The result of this must be that the less highly paying patients are not maintained at anything like the average rate of maintenance, and are certainly not charitably assisted, as above suggested, to the extent of the difference between their payments and the maintenance rate. If an estimate is made, however, on the basis that a patient is charitably assisted to the extent by which his payments fall below £1 per week, then patients paying nothing are benefited to the amount of £1, those paying less than 10*s.* to about 15*s.*, those paying between 10*s.* and 21*s.* to about 5*s.* per week. It will appear that one of these institutions out of its vast income would give charitable aid to the extent of less than 2 per cent., whilst one of the less wealthy group would give aid by nearly 20 per cent. of its income. The total monetary aid given by the two groups on this estimate would closely approximate. If a similar estimate is made on a weekly rate at which charitable aid commences at 25*s.*, a result still more unfavourable to the more wealthy group of hospitals is arrived at in the contrast of the relative percentage of charitable assistance and income.

It would appear, therefore, that these rich institutions under existing conditions are a benefit to the wealthy and well-to-do classes rather than to the poorer members of the same social standing. Wealthy patients are often saved considerable expense (one person to my knowledge having an income of £4000 or £5000 per annum being maintained for £400 a year), but this assistance appears to result in the exclusion of many poor persons, who are consequently driven into or obliged to remain in pauper asylums as paupers. That there are numerous insane persons needing the aid of such institutions as the registered hospitals is shown by the report of the Board of Control, which says (p. 3) that—

> Many classed as paupers are not, strictly speaking, paupers in the generally accepted sense; for a certain number of them are actually maintained by relatives, who refund to the Poor-law guardians the whole cost of maintenance.

The fact that in a total of 9968 private patients in England and Wales there are only 3879 males shows that there must be a large number of males of the private class who, not having wage-earning relatives to support them (as in the case of the females), become inmates of pauper asylums. Were this not the fact, the numbers of male and female private patients should approximate much more closely.

There can be no doubt, either from statistics or from observation of the inmates of pauper anylums, that there are in them numerous persons of the educated classes, who require charitable assistance and treatment, under conditions and with associations more nearly approaching to their normal mode of life. Such help is not only conducive to their comfort and to that of their friends, but is also helpful in treatment. The want of it is often a source of grievous suffering and a drawback to the prospect of recovery.

The admonitions of the Commissioners in Lunacy, who possess from the Board of Control no actual power of insistence, should be followed by some definite indications of the mode in which this much-needed reform should be carried out. It is certain that the managers of these institutions are desirous of doing charitable work, and, if it is fully proved to them that the provision of palatial accommodation and luxurious menage (in rivalry with other institutions or for the purpose of attracting wealthy patients) are not conducive to this purpose, they will be ready to adopt any suggestions made by the Board of Control and loyally attempt to carry them out.

The statistics quoted above and the experience of the private annexes of pauper asylums suggest that one plan of adjusting the charitable activities of the institutions might consist in demanding that all receipts above a certain mean should be expended in charitable assistance to patients unable to contribute that sum for their maintenance. 25*s.* shillings per week, or something more in some hospitals, would probably yield the most satisfactory results, but this is, of course, a matter for the decision of the Board of Control. The general conclusion must be drawn from the preceding facts that, although the registered hospitals are "conducted on good lines and in an enlightened manner [to quote the report], some of them lamentably fail to perform the charitable function for which they were originally founded, and have in some instances largely degenerated into luxurious homes for wealthy patients."

When it is considered that on an income approaching £300,000 in the six more expensive hospitals the really charitable help, whether calculated on the number of persons assisted or on the actual monetary aid, is so infinitesimal, while the actual luxurious expenditure is so large, we are inevitably reminded of Falstaff's "one halfpennyworth of bread to an intolerable deal of sack."

FORTY-FOURTH ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD.

THIS report has now been issued in three sections, of which Parts I. and III. concern medical readers.

Poor-Law Administration.

Under Part I. the administration of the Poor-law is dealt with, the Unemployed Workmen Act, the Old Age Pensions Acts, and the special work arising out of the war in connexion with prevention and relief of distress, reception and accommodation of war refugees, distribution of the gifts from the dominions and colonies, &c. It may be remembered that in the early days of the war it was generally thought there was likely to be serious distress in this country as a result of unemployment, and that steps were taken to combat this evil by the appointment of the Government Committee on the Prevention and Relief of Distress, the organisation of the country under local representative committees, and the establishment of the National Relief Fund in response to an appeal from H.R.H. the Prince of Wales. At the outset the Government Committee laid down the wholesome principles that distress should, wherever possible, be met by the provision of work, that the work provided should be of a useful nature, and that relief by doles should be restricted within the narrowest limits. In order to fulfil these requirements steps were taken to secure the coöperation of the principal spending departments of the Government with a view to the spreading of contracts, and arrangements were made for useful work to be done in connexion with the construction and repairing of roads, as well as in other branches of public work. Fortunately, the unemployment due to the dislocation of industry at the outbreak of war was of short duration, and few of the schemes of work which had been prepared had to be used. The initial unemployment was soon neutralised by the number of workmen who joined the naval and military forces, while the depression experienced in certain trades was counteracted by the great activity in the industries engaged in fulfilling Government orders. At the end of October employment had reached practically the same level as in the period before the war, and by the early part of 1915 the situation had so far improved that the question of unemployment generally had almost disappeared. The total number of persons in receipt of Poor-law relief in England and Wales was smaller at the end of the year 1914–15 than at the end of the preceding year. Exclusive of pauper lunatics in lunatic asylums, the total number of persons in receipt of relief at the end of 1914–15 was 652,152, showing a decrease of 19,968, as compared with the figure at the end of 1913–14, which amounted to 672,120. Further, pauperism in 1914–15 was considerably less than the average for the five years 1909–10 to 1913–14 inclusive. Apparently those brought up in Poor-law institutions show no lack of patriotism, for we are told in this report that large numbers of such men have joined the colours and are serving either in the Navy or Army. The list includes three who have earned the V.C. and a number who have won various other military honours.

The gross expenditure on relief of different classes of paupers, exclusive of sums repaid by the Poor-law authorities on account of non-settled poor, amounted for the year to £15,373,668, apportioned as follows: indoor paupers, £8,972,665; outdoor paupers, £3,053,433; pauper lunatics, £2,792,824. The remainder, consisting of such establishment and other charges as cannot readily be apportioned, amounted to £554,746. It will be remembered with pride that the dominions and colonies overseas sent gifts of large quantities of foodstuffs to this country shortly

after the outbreak of war. In view of the speedy recovery in industrial activity alluded to above it soon became unnecessary to reserve the whole of this supply of food for the relief of distress at home and a considerable quantity of flour was made over to the Commission of Relief in Belgium at a price to be fixed by the Board of Trade, while a very large part of the balance of the flour and other gifts was handed over to the Army Council for the use of the troops. The British Medical Association and the Pharmaceutical Society put forward and coöperated in a scheme for the provision of free medical attendance and the supply of medicines and appliances at cost price to dependents of men serving with the colours, except to those whose circumstances were such as to render such assistance unnecessary. In connexion with war refugees, it is stated in this report that the War Refugees Committee had, at March 31st, 1915, despatched 87,729 refugees to the local committees for hospitality in their respective areas. Refugees arrived from the continent both by the ordinary passenger boats and by special services which had been arranged for the transport of Belgian refugees from Holland. Dr. Reginald Farrar, one of the medical inspectors of the Local Government Board, took charge of a branch office in Flushing, and showed great zeal and devotion in the work of examining and embarking the refugees and looking after their various wants.

Public Health: Treatment of Tuberculosis.

Part III. of the report deals with (*a*) public health and local administration; (*b*) county council administration; (*c*) local taxation and valuation. The subject dealt with under (*a*) will be of greater interest to readers of this journal than those under (*b*) and (*c*), though, as the information given under (*a*) relates mainly to the year ended March 31st, 1915, much of it is rather ancient history to those who follow closely the development of public health work. The report of the Board's medical officer appeared, as in previous years, as a supplement to this report and a review of its contents appeared on p. 636 of THE LANCET of March 18th.

The section of the report dealing with the treatment of tuberculosis has reference to the period ended June 30th, 1915, and applies to England only. Up to the outbreak of war steady progress was being made with the development of approved schemes of treatment, and the large majority of counties and county boroughs had adopted schemes which had received the approval of the Local Government Board. A considerable number of men have been discharged from the Army suffering from pulmonary tuberculosis, and, as the large majority of soldiers are insured persons, arrangements are now in operation whereby, in the case of insured men discharged from the Navy or Army suffering from tuberculosis and requiring treatment in a residential institution, the necessary accommodation is found by the Insurance Commission or by the appropriate Insurance Committee. As many workhouses and infirmaries have been temporarily taken over by the military authorities for use as hospitals, it has been necessary for the local authorities in certain districts to increase the accommodation provided by them for the treatment of tuberculosis in order to provide accommodation for tuberculous persons usually maintained in institutions belonging to the guardians. The Local Government Board has approved of the appointment of 131 tuberculosis officers by county councils, of 100 by county borough councils, and of 7 by joint committees of county and county borough councils. As a large majority of the tuberculosis officers are men of military age, the demands for their services on duties immediately connected with the war have naturally been great, and 69 of these officers had, up to June 30th, 1915, resigned either temporarily or permanently in order to render war service. The loss, thus occasioned, of nearly 33 per cent. of the responsible clinical officers naturally involved some dislocation of the machinery for dealing with tuberculosis, and temporary measures had to be devised in order to secure that the most important aspects of the work should be interfered with as little as possible. Such temporary measures included the appointment of suitable medical practitioners to act as temporary tuberculosis officers, or the utilisation of the part-time services of officers engaged in other public health work. In this connexion the Board state that they have been impressed by the willingness of the medical profession as a whole to put their services at the disposal of the nation in whatever capacity might be deemed most useful. In regard to the financial aspect of the treatment of tuberculosis, it appears that the total maintenance grant paid during the year ended March 31st, 1915, was £155,799 5*s.* 9*d.* The share of England in the capital grant of £1,500,000 which was made available by the Finance Act, 1911, to aid the provision of sanatoria and other institutions for the treatment of tuberculosis amounts to £1,116,156, and up to June 30th, 1915, grants amounting to £408,669 had been definitely promised towards the cost of institutions forming parts of schemes approved by the Local Government Board. Of this sum £195,279 had been actually paid.

The question of conferring upon local authorities further powers in regard to the compulsory isolation of persons suffering from pulmonary tuberculosis who are in a highly infectious condition is discussed in this report. It appears that some nine local authorities have already obtained such special powers under local Acts, but that it has not yet been found necessary to make any extensive use of them. The opinion is expressed that the matter is one which requires careful consideration.

Vaccination: Unsatisfactory Position.

The section of this report dealing with vaccination is far from cheerful reading. The number of certificates of successful vaccination received during the year 1914 was 404,616, as against 430,470 in 1913, and the number of certificates of exemption 321,313, as against 308,235 in 1913. The number of persons on whom successful primary vaccinations were performed by the public vaccinators during the year ended Sept. 30th, 1914, was 301,416, of whom 284,227 were infants under 1 year of age. The latter number includes 4223 children who were vaccinated by medical officers of workhouses and infirmaries. During the same period 13,651 successful revaccinations were performed at the cost of the rates. The total number of births registered during the year ended Sept. 30th, 1914, was 882,333, and, when this number is compared with the number of children under 1 year of age (284,227) who were vaccinated by the public vaccinators, it may be assumed that about 32·2 per cent. of the children born in the year were vaccinated at the public expense. This ratio of 32·2 per cent. of successful primary vaccinations by public vaccinators to the total number of births registered constitutes the lowest on record since 1898. On the other hand, there are indications that this country may have to face an epidemic of small-pox before very long. In certain parts of Europe, Asia, and America at the present time small-pox has assumed epidemic prevalence, and even in England and Wales there have been an unusual number of scattered cases during the last few months. In these circumstances, with an ever-increasing number of unvaccinated persons added annually to the population, the future is not without its anxieties.

THE SERVICES.

ARMY MEDICAL SERVICE.

To be temporary Colonels: Major F. F. Burghard, C.B., R.A.M.C. (T.F.), and Temporary Lieutenant-Colonel T. C. English.

ROYAL ARMY MEDICAL CORPS.

To be temporary Majors: Major T. M. Carter (T.F. Reserve); Captain C. A. Pannett, R.A.M.C. (T.F.); and Captain P. Hamill, R.A.M.C. (T.F.).

Temporary Captain W. Ormsby relinquishes his commission. Temporary Captain G. A. Borthwick relinquishes his commission on account of ill-health.

Temporary Lieutenant Francis P. Kennedy relinquishes his commission.

Temporary Lieutenants relinquish their commissions on account of ill-health: W. E. Huff-Hewitt and G. P. Sheehan.

C. C. Goodall to be temporary Honorary Lieutenant whilst serving with the British Red Cross Hospital, Netley.

F. W. Goyder to be temporary Honorary Lieutenant whilst serving with St. John Ambulance Brigade Hospital.

Canadian Army Medical Corps: The undermentioned Captains (Canadian Militia) to be temporary Captains: W. F. Jackson, D. L. Fee, H. A. Dixon, E. B. Moles, A. W. Knox, E. E. McPherson, H. C. Wallace, J. L. McDonald, H. A. Hessian, A. J. McCallum, and W. C. Givens. Lieutenant J. D. Adamson (Canadian Militia) to be temporary Captain.

Supplementary to Regular Units or Corps: Royal Army Medical Corps.—Cadet J. N. L. Blamey, University of London Officers Training Corps, to be Lieutenant.

TERRITORIAL FORCE.

Royal Army Medical Corps.

North Midland Casualty Clearing Station: Lieutenant J. A. Young to be Captain.

Highland Mounted Brigade Field Ambulance: T. L. Ashforth to be Lieutenant.

Northumbrian Field Ambulance; To be Lieutenants: R. W. Nevin and J. R. Mitchell.

South Wales Mounted Brigade Field Ambulance: Lieutenant J. O. Cuthbertson to be Captain.

Scottish General Hospital: Captain H. J. Stiles is seconded whilst holding a temporary commission in the R.A.M.C.

London Field Ambulance: Lieutenant (temporary Captain) J. E. Sandilands to be Captain.

Attached to Units other than Medical Units.—Lieutenant F. W. White to be Captain. H. W. Beedham to be Lieutenant.

ROYAL NAVAL VOLUNTEER RESERVE.

To be temporary Dental Surgeons: R. R. Adams and F. H. Richards.

THE ORDER OF THE NILE.

The King has given permission to Lieutenant-Colonel F. F. Carroll, R.A.M.C., Principal Medical Officer, Egyptian Army, and to Major J. Powell, R.A.M.C., late Egyptian Army, to accept and wear the decoration of the Third Class of the Order of the Nile conferred upon them by the Sultan of Egypt.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8104 births and 3675 deaths were registered during the week ended Saturday, July 22nd. The annual rate of mortality in these towns, which had declined from 12·6 to 10·7 per 1000 in the four preceding weeks, rose in the week under notice to 11·1 per 1000 of their aggregate civil population, estimated at 17,312,295 persons for the year 1915. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 14·3, against 13·8 per 1000 in London. Among the several towns the death-rate last week ranged from 5·0 in Rhondda, 5·1 in Enfield, 5·5 in Southend-on-Sea, 5·7 in Lincoln, and 6·0 in Reading, to 15·3 in Bootle, 15·4 in Brighton, 15·5 in Barnsley, 16·0 in Exeter, and 18·6 in Gateshead.

The 3675 deaths from all causes were 123 in excess of the number in the previous week, and included 212 which were referred to the principal epidemic diseases, against numbers declining from 335 to 222 in the seven preceding weeks. Of these 212 deaths, 59 resulted from measles, 46 from infantile diarrhœal diseases, 43 from diphtheria, 42 from whooping-cough, 17 from scarlet fever, and 5 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0·6, against 0·7 per 1000 in each of the five preceding weeks. The deaths attributed to measles, which had been 68, 60, and 62 in the three preceding weeks, fell to 59, and included 16 in London, 9 in Liverpool, 6 in Sheffield, and 4 each in West Ham, Wolverhampton, and Birmingham. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 50, 54, and 51 in the three preceding weeks, fell to 46, of which 12 occurred in London and 4 in Birmingham. The fatal cases of diphtheria, which had been 29, 36, and 47 in the three preceding weeks, fell to 43; 8 deaths were registered in London, 6 in Bradford, 4 in Stoke-on-Trent, and 3 in Wolverhampton. The deaths attributed to whooping-cough, which had been 55, 61, and 40 in the three preceding weeks, slightly rose to 42, and included 8 in London, 7 in Birmingham, and 6 in Manchester. The deaths referred to scarlet fever, which had been 13, 4, and 15 in the three preceding weeks, rose to 17, of which 5 were recorded in London and 2 in Salford. The fatal cases of enteric fever, which had declined from 13 to 7 in the four preceding weeks, further fell to 5, but showed no excess in any particular town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 1303 to 1236 in the four preceding weeks, had further fallen to 1216 on Saturday last; 172 new cases were admitted during the week, against 162, 170, and 150 in the three preceding weeks. These hospitals also contained on Saturday last 1266 cases of diphtheria, 188 of measles, 162 of whooping-cough, and 43 of enteric fever, but not one of small-pox. The 896 deaths from all causes in London were 7 in excess of the number in the previous week, and corresponded to an annual death-rate of 10·8 per 1000. The deaths referred to diseases of the respiratory system, which had been 107, 95, and 117 in the three preceding weeks, fell to 99 in the week under notice.

Of the 3675 deaths from all causes in the 96 towns, 176 resulted from violence, 326 were the subject of coroners' inquests, and 1187 occurred in public institutions. The causes of 29, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Sheffield, Leeds, Bristol, and in 63 other smaller towns. Of the 29 uncertified causes, 7 were registered in Liverpool, 5 in Birmingham, 3 each in South Shields and Gateshead, and 2 in Hull.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1141 births and 511 deaths were registered during the week ended Saturday, July 22nd. The annual rate of mortality in these towns, which had been 12·6, 12·4, and 12·6 per 1000 in the three preceding weeks, fell to 11·2 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 15·3, or 1·0 per 1000 in excess of that recorded in the large English towns. Among the several towns the death-rate last week ranged from 3·4 in Coatbridge, 6·2 in Ayr, and 6·4 in Kirkcaldy to 13·3 in Edinburgh and in Dundee, 13·8 in Falkirk, and 14·6 in Leith.

The 511 deaths from all causes were 60 below the number in the previous week, and included 39 which were referred to the principal epidemic diseases, against 46 and 44 in the two preceding weeks. Of these 39 deaths, 17 resulted from measles, 7 from infantile diarrhœal diseases, 6 from diphtheria, and 3 each from enteric fever, scarlet fever, and whooping-cough, but not one from small-pox. The annual death-rate from these diseases was equal to 0·9, against 0·6 per 1000 in the large English towns. The deaths attributed to measles, which had been 28, 19, and 18 in the three preceding weeks, numbered 17 last week, and included 9 in Glasgow, 3 in Leith, and 2 in Edinburgh. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 13, 5, and 8 in the three preceding weeks, were 7 last week, of which 5 occurred in Glasgow. The fatal cases of diphtheria, which had been 5, 5, and 3 in the three preceding weeks, rose to 6, and included 2 in Edinburgh. The 3 deaths from enteric fever were recorded in Glasgow, Dundee, and Clydebank respectively. The 3 deaths attributed to scarlet fever were 2 below the average in the three preceding weeks, and were registered in Glasgow, Motherwell, and Ayr respectively. The fatal cases of whooping-cough, which had been 5, 8, and 8 in the three preceding weeks, fell to 3, and comprised 2 in Glasgow and 1 in Paisley.

The deaths referred to diseases of the respiratory system, which had been 57, 64, and 50 in the three preceding weeks, rose to 62 in the week under notice, but were 10 below the number registered in the corresponding week of last year. The deaths from violence numbered 22, against 23 and 16 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 206 births and 116 deaths were registered during the week ended Saturday, July 22nd. The annual rate of mortality, which had been 17·9, 17·6, and 18·8 per 1000 in the three preceding weeks, fell to 15·2 in the week under notice, against 10·8 and 11·1 per 1000 in London and Glasgow respectively.

Of the 116 deaths at all ages, 23 related to infants under 1 year and 25 to persons aged 65 years and upwards. Three deaths of infants (under 2 years) were referred to diarrhœal diseases, and 1 each to measles and diphtheria.

The causes of 10 deaths were uncertified, and 3 others were the subject of coroners' inquests, while 51, or 44 per cent., of the total deaths occurred in public institutions.

During the same period 165 births and 109 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 14·6, or 0·1 per 1000 less than in the previous week, and included 16 of infants under 1 year and 23 of persons aged 65 years and upwards. Two deaths were referred to measles, and 1 each to enteric fever and whooping-cough. The causes of 3 deaths were the subject of coroners' inquests, and 32 deaths occurred in public institutions.

NATIONAL WELSH MEDICAL SCHOOL.—A deputation from the Council of the University College of South Wales has been appointed to urge the Ministry of Munitions to permit the building of the department of public health and preventive medicine simultaneously with the physiological block. The deputation includes the President and Vice-Presidents of the Council and the Principal, Dr. E. H. Griffiths.

Obituary.

SIR VICTOR HORSLEY, M.B., B.S. LOND., F.R.C.S. ENG., F.R.S.,

COLONEL CONSULTANT, MEDITERRANEAN EXPEDITIONARY FORCE; CONSULTING SURGEON, UNIVERSITY COLLEGE HOSPITAL; SURGEON TO THE NATIONAL HOSPITAL FOR PARALYSIS AND EPILEPSY.

WE regret deeply to chronicle the death of Sir Victor Horsley, while he was acting as consulting surgeon to the British Forces in Mesopotamia. His eminent scientific position and the numerous social causes of which he was the champion made him one of the best known as well as one of the most widely admired of our professional leaders, and the number of public men, private friends, colleagues, and pupils is really great to whom Horsley's sudden death has come as a shock when recalling his vigorous and forceful personality.

Victor Alexander Haden Horsley was born in Kensington in 1857, the son of the late J. C. Horsley, the well-known painter. He was educated at Cranbrook School and University College Hospital, where his career was an unbroken line of academic successes. He qualified as M.B. Lond. and B.S. in 1881, winning the University scholarship and the gold medal in surgery. Two years later he took the F.R.C.S. Eng., and for a time was occupied with minor posts in connexion with the hospital, although he was already engaged upon original physiological work. From 1884 to 1890 he was Professor Superintendent of the Brown Institution, and while he occupied that post he made the elaborate and exhaustive experiments which went to show that myxœdema was caused by absence of the thyroid gland. In 1885 he was elected assistant surgeon to University College Hospital, and in the following year surgeon to the National Hospital for Paralysis and Epilepsy. In 1893 he became full surgeon to University College Hospital, but resigned four years later, being elected consulting surgeon. From 1891 to 1893 he was Fullerian Professor at the Royal Institution, and from 1893 to 1896 he was Professor of Pathology at University College. In 1911 he was the first recipient of the Lannelongue International Prize in Surgery. Elected when quite young to the Royal Society, he was a Royal Medallist of the Society and a Foreign Associate of academies and scientific bodies all over Europe. From 1897 to 1906 he was a Direct Representative on the General Medical Council; he was the first chairman of the Representative Meeting of the British Medical Association, a body called into existence at the reconstitution of the Association; he was a candidate for Parliament in the Liberal interest, standing especially on temperance and women's suffrage lines.

Such is the brief outline of Victor Horsley's life, and in every indicated direction he became a leader in thought and in action. By the end of the "eighties," and whilst still about the age of 30, he had gained for himself an extraordinary position owing to his original work in various directions on ground common to physiology and pathology. As secretary to the Myxœdema Commission, whilst Ord and others supplied clinical material, Horsley collected information from Switzerland, and furnished the needed proof by removal of the thyroid gland from monkeys. When he became superintendent of the Brown Institution he was called upon to investigate the widespread occurrence of rabies and hydrophobia. He had learned under Pasteur in Paris to recognise rabies in the material sent to the institution from various animals in addition to dogs, such as cats, foxes, horses, rabbits, and the deer in Richmond Park. There had been much confusion as to the signs of the disease. On the one hand there was a mare which, after being bitten on the muzzle by a dog, kicked the stall to pieces in violent excitement, and on the other hand the so-called "dumb rabies," the rapidly ascending spinal and bulbar paralysis from which Horsley's laboratory attendant died. Horsley's investigations into rabies formed the scientific basis of the Muzzling and Quarantining of Imports Orders which stamped out the disease, in accordance with his published prediction. He surrounded himself at the Brown Institution with a number of workers, all of whom shared his enthusiasm. For instance, L. C. Wooldridge was engaged on that fundamental subject in physiological chemistry—blood coagulation—and, aided by Horsley's suggestions, he perfected a most striking experimental demonstration of the effect of normal saline infusions. From this arose the use of normal salt solution in this country; previously it had been entirely unknown in surgical practice. The sudden death of Wooldridge deeply affected Horsley; he connected it with other cases in which cardiac and visual disturbances had been attributed to tobacco, and the event intensified his antipathy to smoking.

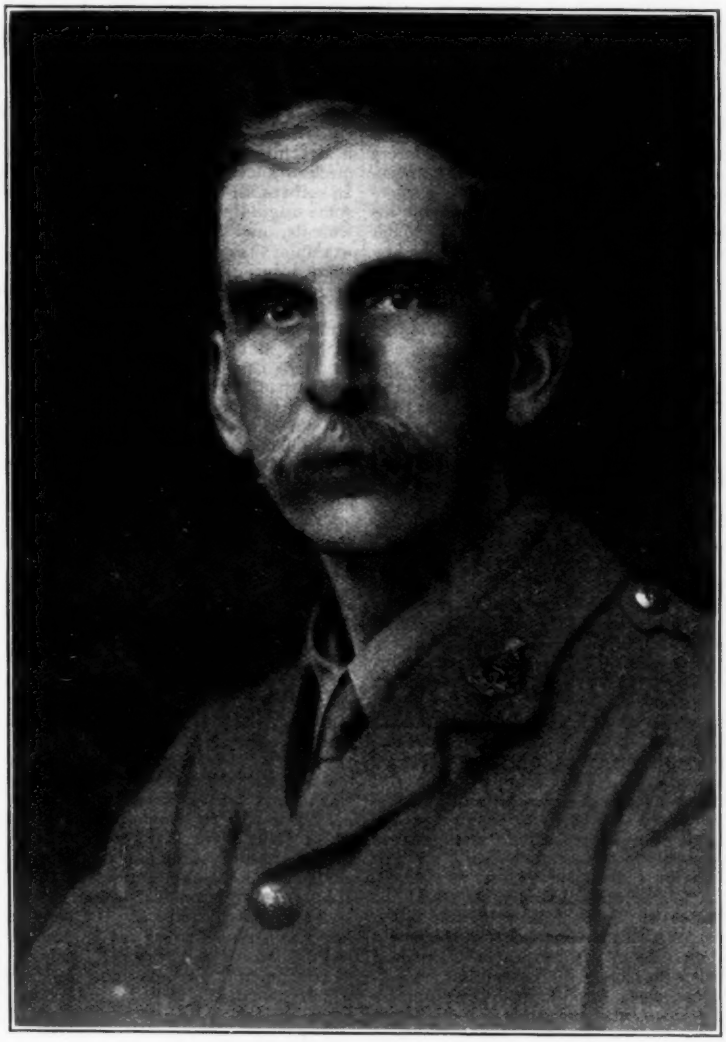
In many investigations Horsley was the active leader and in many he was an effective partner. He mapped out with C. E. Beevor the areas on the brain of the rhesus and allied monkeys. When they were able to obtain anthropoid apes they demonstrated the arrangement of the sensori-motor areas in front of the fissure of Rolando, and confirmed the existence of the so-called "silent" areas, both points having already been brought under Horsley's notice in man. A series of experiments on the spinal cord, including the production of degeneration along tracts, and the demonstration of spinal cord currents were performed in conjunction with Professor Gotch at Oxford. The results of their work were published in the Croonian lecture at the Royal Society in 1891.

Concurrently with his work at the Brown Institution, Horsley was in charge of the pathological laboratory at University College, where he was ably seconded by Rubert Boyce. The Syllabus of Lectures on General Pathology which they drew up was exhaustive; the one thing lacking was an audience. The medical student was concerned only with the requirements of his examination; teaching was then confined to pathological anatomy and histology, which had its focus in the old Pathological Society, and Horsley and Boyce were before their time. Horsley became one of the principal originators of the Pathological Club which in its turn anticipated the wider scope of the present Pathological Section of the Royal Society of Medicine, including its laboratory meetings. Everybody recognises nowadays the importance of chemistry, but there was much criticism when Horsley's influence enabled a department in chemical pathology to be set up alongside his laboratory. Press of work soon forced him to give up both the Brown Institution and the Pathological Laboratory at University College, but he continued to carry on original investigations. Perhaps the two to which he devoted most work over a prolonged period, and in which difficulties and obscurities have presented hitherto insuperable obstacles, were those relating on the one hand to epilepsy, and on the other hand to intracranial tension resulting in particular from bullet wounds. Whatever he may have published on these subjects must represent but a fraction of the time, labour, and thought he devoted to them.

Horsley in all his experiments and researches had a practical aim in view; he lived and died in the practice of surgery. He served at University College Hospital in the various posts up to that of surgeon, but it is as surgeon to the National Hospital for the Paralysed and Epileptic that he will be chiefly known. Before him the surgery practised there had been limited to the haphazard uncritical performance of tenotomy which Stromeyer and Dieffenbach had popularised in the "forties" of last century. Horsley's three cases of brain surgery, read at the British Medical Association Meeting in 1886, marked the commencement of a phase of notable activity. His experiments in connexion with myxœdema started him on the surgery of the thyroid gland, and the nervous disturbances connected with that gland linked it with cerebro-spinal surgery. Moreover, arising out of the myxœdema inquiry, he made experiments on the removal of the pituitary gland in animals; subsequently he began to operate for pituitary tumours. The remarkably successful operation in which he removed a tumour which had been diagnosed by Gowers as compressing the spinal cord forms a permanent landmark in the history of surgery. He had to begin operating at the National Hospital without the provision of an operating theatre. Just as Spencer Wells did his first ovariotomy at the Samaritan Hospital, so Horsley started to expose the roots of the fifth nerve and the Gasserian ganglion in the corner of a ward shut off by screens. The wonderful physiological and pathological knowledge possessed by Horsley enabled him to achieve many extraordinary successes, but he met also with partial success, as well as with failure, and the records of the work which he did are neither full nor satisfactory. He commenced quite early to

sketch out a systematic work on brain surgery, but whilst he published a number of remarkable contributions on various sections of his work the systematic book has not appeared. It would be a great contribution to surgical knowledge if to the publication of his long list of successes there might also be added details of the cases in which his best efforts failed to achieve their object.

A significant feature of Horsley's experimental work in neurology was his explicit belief that experience in laboratory research is of direct value to the clinician, and especially to the surgeon. His own experimental investigations were characteristically those of a clinician seeking in the laboratory to obtain light on the symptoms seen in the clinique. His theme was therefore practically always the "localisation" problem in one or another of its forms, the "localising" of centres, or the "localising" of conducting tracts. Thus, the original results of Ferrier on the functional topography of the cortex of the cerebrum were minutely reworked over, and a number of important details added. The upward conduction lines in the spinal cord were reinvestigated, and attempts made at better quantitative evaluation of the crossed and uncrossed effects. The region of the thalamus was carefully explored with interesting results. The subject of cerebellar function as far as it can be studied by electrical stimulation was laboriously re-examined and new data contributed. All this work was done in collaboration, now with one colleague now with another; and that fact exemplifies a mental trait characterising Horsley in other of his activities as well—namely, intense striving after coöperative effort. In his collaboration with others in research he himself usually suggested the immediate aim towards which the investigation should be directed, and the elaboration of the method employed would lie with his collaborator. These partnerships were many and brought much of neurological value to light. Contact with him in the laboratory was always an incentive to effort. His early activity as an investigator by experiment and his fearless public endorsement of the rights of such inquiry brought on him the special opprobrium of the antivivisectionists. He contributed largely to the public refutation of the misstatements of these opponents. Among all the varied social interests of his later life this keen championship for the rights of those who engage in inquiry by vivisection remained ever as active as it had been at the beginning of his career.



SIR VICTOR HORSLEY, F.R.S.,
COLONEL (TEMP.), ARMY MEDICAL SERVICE.

The following has been sent to us by a pupil of Horsley who later became a colleague. It repeats details that we have already mentioned in presenting a very complete, if brief, picture of Horsley's neurological work. "If we are to judge of a man's pre-eminence by the reputation his work obtains, both at home and in continental and foreign schools of medicine, few have equalled and none surpassed that which was universally acknowledged as having been worthily earned by Sir Victor Horsley. As a cerebral physiologist and anatomist he was in the very front rank of experimental workers. The passion which he showed while yet a surgical registrar at University College Hospital for this variety of research never was dimmed through the busy years of a very large surgical practice. Taking up with characteristic energy and enthusiasm the lines of research initiated in this country by Sir David Ferrier, he probed ever further into the intricacies of cerebral and cerebrospinal function. The Philosophical Transactions and the Proceedings of the Royal Society, the *Journal of Physiology*, and *Brain*, more particularly of the 'eighties' and 'nineties' of last century, contain a series of papers, which, when judged merely by the quantity of output, seem a tremendous accomplishment for a young man, but when their originality and quality are also considered they will be admitted to constitute a record that is all but unique. By himself, or in collaboration with Sir Edward Schäfer, the late Professor Gotch, Sir Felix Semon, and others, he made enduring contributions to our knowledge of the functions of the brain and spinal cord. Perhaps his best work in this respect was done in association with the late Dr. Charles Beevor. This was an ideal combination; the enthusiasm and rapidity of work of the one had a valuable counterpoise in the patience, caution, and critical hesitancy of the other. Their joint work on the connexion of the cortex with the lower centres, on the electrical excitation of the cortex and internal capsule of the orang-outang, on the internal capsular fibres of the bonnet monkey, on the

motor cortex of the monkey, on the centres for face, mouth, throat, and larynx in the ape, &c., has long ere this been acknowledged as classical. Horsley would not allow the exigencies of his surgical work to interfere with his experimental investigations. He organised a laboratory of experimental neurology at University College, and there he was always to be found on certain afternoons in the week tackling fresh problems with undiminished ardour, as the pages of *Brain* testify. None who have ever worked there under his ægis are likely to forget his infectious keenness and his unequalled generosity. All that he asked was that men who came there should be workers, and they did come, in an unfailing stream, from home, from the colonies, from America, Germany, Poland, France, and elsewhere. It was a matter of indifference to him whether their researches were published with or without his expressed collaboration; all recognised that he was the leading spirit in the international coterie that laboured in that odd-shaped and out-of-the-way room which to many of the younger generation of neurologists at home and abroad was a veritable Mecca. Brilliant and enduring as his reputation is certain to be as an experimentalist, his world-wide fame rests undoubtedly on his superlative eminence as a neurological surgeon. The surgery of intracranial and spinal tumours was a *terra incognita* when Horsley began, in the 'eighties' of last century, to explore where others had been afraid to tread. Fortified by his experimental knowledge, and with a sureness of touch acquired in a similar way, he did not hesitate to tackle any form of cerebral or cerebellar case, as an early paper of his in the *British Medical Journal* for 1887 will show. This article was written to demonstrate, among other points, the 'details and safety of his methods,' words which must appear a little strange to-day, when cerebral surgery is undertaken almost as a routine. In 1888 he successfully removed a spinal tumour by operation in a case under the care of the late Sir William Gowers. This was the first time the operation had been performed, and it was an epoch-marking event. The full record of the case is in the Medico-Chirurgical Transactions for 1888, and is well worth perusal. Thenceforward Sir Victor Horsley's position as a bold and skilful neurological surgeon was supreme. At the International Medical Congress held at Berlin in 1890 his communication on the surgery of the central nervous system was hailed with acclamation. The tribute of the foreigner was voiced in Professor Oppenheim's 'Lehrbuch der Nervenkrankheiten' when he declared that 'this celebrated neurologist and surgeon has since then remained the master of his subject, and he may well be proud of his great experience and success.' Not content with his attainments, Horsley laboured continually to improve his technique in intracranial work; witness the address on surgery given at the Toronto meeting of the British Medical Association in 1906. The prime factor in his astonishingly successful results was the speed with which he operated. No one could handle his instruments so dexterously as he did himself, though his methods have been copied and modified far and wide. While scientists made their way to his laboratory for his experimental investigations, distinguished clinicians came to Queen-square to see him operate. It was no uncommon sight to see there such visitors as Kocher, Babinski, de Martel, Picque, and others that might be mentioned. His audience in the operating theatre at the time of the International Medical Congress of 1913 was a particularly brilliant one. Horsley's results in extirpation of the Gasserian ganglion for trigeminal neuralgia were particularly good, and he had operated on hypophyseal tumours half-a-dozen times or more by the subtemporal route before any other surgeon had begun to record similar essays. He was *facile princeps* in neurological surgery, a prince of brain surgeons. With characteristic independence and, one may almost say, impatience, he made his own diagnoses and carried out his own ideas in regard to treatment in a way that sometimes brought him into conflict with his medical colleagues. But he was ever a fighter, and his self-confidence was widely based on his unequalled experience. Neurology as a science owes its established position to the labours of those mighty pioneers whose names are familiar to all the profession. Among them the name of Sir Victor Horsley is inferior to none in actual international fame; it is that also of a man who in versatility of accomplishment and in combination of theoretical and practical attainment was unequalled by any."

An officer who served with him in Egypt writes of the last phases of his strenuous career in these words: "Sir Victor Horsley's death in Mesopotamia is one of the tragedies of the war. I had the honour of being attached to the general hospital in which he at first was in charge of the surgical section. That a man of his eminence in the profession should have consented to accept such a position was a proof, if any were needed, of his intense desire to do everything that lay in his power to serve his country. From the very first his energy and keenness was an example to us all. Soon after his arrival in Egypt he was given an appointment more in keeping with his professional position and was made consulting surgeon to the Forces. Before this, however, he had done an immense amount of valuable work in assisting to organise the surgical side of the base hospital to which he was originally attached. As a consulting surgeon he did splendid work; he devoted with unsparing zeal both time and energy to finding out and correcting, as far as lay in his power, any defects of equipment or mistakes in organisation in the hospitals, and in the early days in Egypt there were many of these. He was always ready to help with his advice and example those of us who asked him to do so, and in the midst of the most trying circumstances he never lost his cheeriness or good temper. In spite of all the calls upon him he found time to carry out some original work in connexion with the infection of head wounds, and it was entirely owing to his teaching and example that the results of the operative treatment of these injuries, at any rate in one of the hospitals, were so extremely good. His energy and devotion to his work was the more striking because it was obvious that the atmosphere of a military hospital was not very congenial to him, and when we remember his force of character and independence this is not to be wondered at. The amount of work he got through in Egypt undoubtedly tried his strength, and he could not be persuaded to rest to the extent that was really necessary, especially in the hot weather. A tour of inspection which he paid to the Peninsula did him good in this respect, but the many muddles and deficiencies which he found there must have had a depressing effect upon his spirits. He volunteered for duty in Mesopotamia without any thought for himself, and I am sure that he went there in the hope that he might be able to do something to remedy the defects in the medical arrangements which are now so notorious. If he expended, as I am sure he did, all his strength and energy on this work, it is little wonder that he should have succumbed to the effects of that most trying climate. Victor Horsley's was a most charming personality and he was a great favourite in our mess. His death leaves a blank in the branch of surgery, which his genius had played so large a part in founding, that at the present there is no one fitted to fill."

Great as were the services rendered by the late Sir Victor Horsley to physiology and surgery, he had titles to fame outside his professional work. For some years prior to the war he had devoted much time and energy to politics, taking an active part in elections, and standing for the University of London at the last general election. In politics he was an advanced Liberal and democrat. Free Trade, the great Budget of 1909, the removal of the undue influence of the House of Lords on legislation all found in him a vigorous and eloquent champion. Perhaps to the outside world he was best known as a most ardent advocate of the cause of temperance, basing his support not on mere general grounds but on scientific reasoning, to which his distinguished professional career added very great weight. He also embraced the cause of women's suffrage with all the ardour of a chivalrous temperament. Had he lived, however, he would probably not have made a successful politician, for he understood very little of the art of compromise which is more essential to success in English than in continental politics. His constant employment of the deductive method of reasoning, perhaps the outcome of his scientific training, was peculiarly unsuitable to politics, and especially to the politics of this country. He could not have subscribed to the dictum of so staunch a reformer as Macaulay that you should never "remove an anomaly simply because it was an anomaly." Horsley's logical mind was out against all anomalies. Like many men of advanced views, he was inclined to think that very much of the evil in the world might be set right by a few drastic measures. He did not possess a profound knowledge of

human nature, and was not interested in trying to understand why men think as they do think; consequently he often failed to appreciate the views of his opponents and was easily led to suppose that they were necessarily perverse and obstinate people. With regard to the medical profession he seems to have felt that somehow the State did not know how to make use of the knowledge possessed by such a large body of highly educated and scientifically trained men.

Horsley died full of plans for the future, but with a past of wonderful accomplishment. He died for his country, having taken upon himself a splendid task for which his physique was not wholly fitted, and he will be sincerely mourned by countless friends, pupils, colleagues, and admirers. He had many differences of opinion with many of them, and sometimes they were violent ones, for Horsley was uncompromising, but all such feelings will be merged in one of deep and sincere regret that Victor Horsley should be gone from us.

Sir Victor Horsley married in 1887 Eldred, third daughter of Sir Frederick Bramwell, Bart., by whom he had two sons and one daughter. To Lady Horsley and her family the deepest sympathy will be extended in their irreparable loss.

WALTER WILLIAM HUNT TATE, M.D. LOND., F.R.C.P. LOND.,

OBSTETRIC PHYSICIAN TO ST. THOMAS'S HOSPITAL.

Walter William Hunt Tate was born on Dec. 18th, 1865, his father, George Tate, being a practitioner in the north of London. He received his early education at University College School, joined University College as a medical student, and finished his clinical work at University College Hospital. He won early recognition from his teachers as a capable and earnest student and held the resident posts at the hospital of house physician, house surgeon, and obstetric assistant. He was afterwards elected resident medical officer and performed the duties of this important post with great success. On the termination of this appointment he had intended going into general practice in the Hampstead neighbourhood, but the post of obstetric tutor and registrar at St. Thomas's Hospital being created he applied for the post and was elected.

Though appointed as tutor and registrar, Tate was from the first, for all practical purposes, assistant obstetric physician, for Dr. Cory, who held that post, was in indifferent health. Dr. Cullingworth, the senior obstetric physician, had a high standard by which he judged men, and that Tate at once obtained his confidence to the full was a tribute to the self-reliance and power which had enabled so young a man to make the most of his unusually favourable opportunity. Dr. Cullingworth entrusted him more and more with a share of the ward work, and relied on him for relief from night emergency work and for holiday duty. The only real difference made by his appointment in 1896 as assistant physician on Dr. Cory's resignation was that he then began regular clinical teaching in the out-patient department in addition to acting as Dr. Cullingworth's assistant and deputy.

It is not, however, as a teacher in the out-patient room that Tate will be remembered by the St. Thomas's men of the past 20 years, but for his work and teaching in Adelaide Ward. His term in the out-patient's was short—barely five years—and during that time the work of the department increased rapidly and the accommodation for patients was enlarged from 20 to 28 beds, so that Dr. Cullingworth, whose health was far from good, left him an increasingly active share in the ward work. In 1901 he became full physician with charge of three-quarters of the beds, Dr. Cullingworth retaining one quarter only, and this continued till Dr. Cullingworth's final retirement in 1904, after which Tate took sole charge.

As a teacher it was the clinical side of the work that appealed to him, and chiefly gynæcology. Midwifery never attracted him. He held no appointment at a lying-in hospital and his supervision of the outdoor maternity district was not of long duration, and scarcely gave scope enough to distract his interest from the large share in the gynæcological work that fell to him. He had excellent clinical insight and came rapidly to a clear opinion on his cases, and it was this very faculty of quick decision that attracted students and was an important factor in his success in practice. In addition, he was a delightful operator to watch, and had marked manipulative skill and was intensely interested in all difficult surgical problems that arose in the course of his work—all of which appealed strongly to the students. The amount of hospital work he got through was always a marvel to his house officers and dressers, as well as to those who knew what a busy private practice he had. His teaching experience naturally led to his becoming an examiner and he acted for four years at the Apothecaries' Hall, for five years at the Conjoint Board, and at the time of his last illness was serving as examiner at the University of Cambridge.

He was never a prolific writer, though he was a frequent exhibitor of specimens and recorder of cases at the Obstetrical Society and later at the Obstetrical Section of the Royal Society of Medicine. Pathology interested him only so far as it helped in diagnosis and treatment, and his writings reflect closely his bent towards the clinical side. One of his early papers was on "Three Cases of Pyometra Complicating Cancer of the Cervix Uteri," published in the Obstetrical Transactions for 1897. Another paper read in 1904 on "Three Cases of Intestinal Obstruction following Operations for Fibroid Tumour of the Uterus, with special reference to the choice of operation," in which he advocated total hysterectomy rather than supravaginal amputation, gave rise to an interesting discussion. Many short communications and descriptions of specimens and cases are to be found in the Obstetrical Transactions. In the St. Thomas's Hospital Reports are several papers from his pen, among them one on the Clinical Aspects of Tubal Gestation in the Early Months, and another on Cancer of the Uterus, containing clinical observations on 50 cases treated by vaginal hysterectomy, an operation in which he had considerable experience and much success, though latterly he gave it up for the abdominal route. Other papers on gynæcological subjects may be found in the *Journal of Obstetrics and Gynæcology of the British Empire*, the *Practitioner*, and the weekly medical press, and doubtless, had he been spared to review his extensive hospital and private practice, he might have left more of his valuable experiences.

Tate took a prominent part in the work of the old Obstetrical Society and of the Obstetrical Section of the Royal Society of Medicine. He was first elected to the council in 1895, served as an examiner for midwives on the old examining board in 1898–99, filled the office of secretary in the years 1911 to 1913, and at the time of his death had just been elected President of the Obstetrical Section of the Royal Society of Medicine for the ensuing year.

He married in 1896 the widow of the late Dr. Anthony Dalzell, who survives him; there were no children of the marriage.

THE ASSOCIATION OF INFANT WELFARE AND MATERNITY CENTRES.—The fifth annual conference of this society was held last week in Bristol. Dr. D. S. Davies, the medical officer of health of the city, presided at the opening and welcomed the delegates. Dr. Eric Pritchard, the chairman of the National Association, in the course of his speech, stated that specialists were not as suitable for the work as well-informed nurses and health visitors.

PRESIDENCY OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—Earlier in the year the Royal College of Physicians of Ireland appointed a committee to consider the method of electing the President of the College. The College has now received and considered the report of the committee, and at its last meeting passed a series of by-laws designed to introduce considerable modifications in the mode of election. For more than 200 years it has been the custom in the College for the various officers to elect a President among the Fellows of the College resident in Dublin in order of seniority. Since 1830 it has been the custom for the President to hold office for two years. This method of election had much to recommend it when the number of Fellows was small, but in recent years the presidency tended to lose its dignity since it became a prize automatically awarded for mere longevity. The College has now decided to make a real choice effective in electing the President. In September of each year a ballot will be held for the selection of a panel of three Fellows as candidates for the presidency. On the first Friday of October the College will, by a further ballot, select one of the three for nomination as President, and on St. Luke's day the name of the Fellow so nominated will be submitted for formal election. In the ordinary course the President will hold office for three years, but provision is made for a more frequent change if the College should so decide.

Correspondence.

"Audi alteram partem."

THE EFFECT OF FERRIVINE AND INTRAMINE ON SYPHILIS.

To the Editor of THE LANCET.

SIR,—Mr. J. E. R. McDonagh states in your issue of July 15th, in a letter with this heading, that I should not have made my objections to his theoretical views if I had read his work. My delay in answering his letters is mainly due to the careful attention that I have given to his Hunterian Lectures, "Links in a Chain of Research on Syphilis (Oxidation and Reduction)," delivered in March, 1916. This is a book to which he specially refers, and we may suppose that it gives his latest conclusions. The references in the following lines apply to pages in this work. I can only say that my mystification is greater than ever. When description is given of the various well-known phenomena applying to the subject the statements are perfectly intelligible and correct. It is only when he proceeds to give his own ideas that what appear to be the most extraordinary statements are made. We might apply to the book as a whole the saying that "What is true is not new, and what is new is not true." Now, the difficulty that I feel is that, although quotations might be made from nearly every page whose incorrectness would be obvious to the physical chemist at a glance, yet it is not to be expected that readers of this journal would have had the opportunity or necessity to acquire a similar knowledge. They have, indeed, so much other matter to take account of which is of vital importance in their work. I must therefore limit myself to a few of the more obvious cases.

The basis of Mr. McDonagh's theories lies in what he calls "lipoid-globulin molecules" or particles, their varying distribution in the blood of normal and syphilitic patients and their presence in large amount in the parasites themselves. These molecules are supposed to constitute an "oxidase-reducase system," and the whole edifice really rests upon this hypothesis or "fact." I am not prepared to deny the existence in the blood or elsewhere of such adsorption compounds; indeed, it is very probable. But what is the evidence that they are endowed with the properties of oxidising or reducing enzymes? When I used the expression "selected," to which Mr. McDonagh takes so much objection, I had in my mind the possibility that the phenomena interpreted as due to oxidation and reduction might turn out to be at least as readily explicable on other hypotheses, especially as the complexity and obscurity of oxidation in the living organism so easily leads to misunderstanding. Doubtless I did not make use of quite the correct words. My consideration of the small amount of experimental basis this view has confirms me in my opinion. The evidence amounts to the presence of unsaturated carbon atoms in the lipoids of the complex and to certain reactions to dyes. As far as the former is concerned, the particles seem to be possessed of some degree of reducing power, but not a great one. Curiously, the reaction to osmic acid was not tested. But even a considerable degree of reducing power does not imply catalytic activity as a reduction enzyme or reducase. Oleic acid is not regarded as a reducase. In the paper by McDonagh and Mackenzie-Wallis it is expressly stated that no evidence was to be found of the presence of an oxidase or a peroxidase in the particles. Nevertheless, on p. 19 of the "Links" it is said that peroxides and peroxidases form part of the system, the two together forming an oxidase. As regards the behaviour to dyes, Unna's view of the definite relation of staining to oxygen places in the cell is accepted, notwithstanding that it has clearly been shown to be false by Drury.[1] The adsorption of dyes is quite as complete in the absence of oxygen, active or molecular, as in its presence. I do not admit that processes of adsorption in the living organism are totally different from all other processes, nor that the case of charcoal and carbon dioxide is beside the point. When the statement is made that adsorption *in corpore* differs from other forms, we must remember that staining *in vivo* is understood by McDonagh and Mackenzie-Wallis as that of dried films. Moreover, alcoholic solutions are recommended for use. Certain of the staining reactions given as proof of reducing properties are clearly connected with electrical charge, but the explanation of this error will be seen immediately.

After having read the greater part of the book, it dawned upon me that many of the misconceptions in it are due to the fact that the author regards as identical in nature not only the OH groups in organic compounds and hydroxyl ions (p. 22), but also hydrogen peroxide (p. 139). This latter is represented as OH + OH (p. 22). In another place (p. 16), the OH group is considered to be a reducing agent. These confusions lead to the putting forward of some rather astonishing chemical equations, such as the following:—

$$R.S\ S.R. + 2H + 4OH = R.S + R.SH + 2H_2O_2 + H'$$ (p. 140).

The hydrogen ion is called here, by the author, "active hydrogen," just as in other places (pp. 139 and 179) the oxygen ion (O''), which is so rarely met with and even then in negligible quantity, is regarded as identical with active oxygen. It is scarcely neeessary to point out that it is "active hydrogen" and "active oxygen" which are concerned with reduction and oxidation processes, not the ions produced by electrolytic dissociation, although on p. 21 Mr. McDonagh says that "active hydrogen is a kation" and refers to "the negative charge that active oxygen possesses." What these forms of oxygen and hydrogen really are is not known. All that can be said as yet is that in some way their chemical potential is raised by the supply of energy, so that they are able to oxidise or reduce substances which the ordinary forms of these elements are unable to act upon. Active oxygen is not necessary for all oxidations, contrary to the statement on p. 171. Atmospheric oxygen has a sufficiently high oxidation potential to combine with pyrogallol, as every photographer knows. Dilute nitric acid is rich in hydrogen *ions*, but has no reducing properties. Ions must be looked upon as chemical compounds of atoms with electrical charges and therefore of a different *chemical* nature from the atoms themselves. The globulin component of the "lipoid-globulin particles" is, of course, as an amphoteric electrolyte, capable, at least potentially, of affording either hydrogen or hydroxyl ions, but this is a totally different matter from acting as a reducing or oxidising system. For this latter statement, indeed, I can find no reference given to any experiments of a satisfactory nature. The majority of the original statements in Mr. McDonagh's book are, in fact, given without experimental evidence or reference to experiments made. While many of these statements are clearly due to misconception, others may possibly be true, but they are at present quite incapable of experimental test, since the means of doing so fails us.

Other difficulties in the way of a clear comprehension of Mr. McDonagh's views are due to his use of words in a sense which is not only different from that generally understood, but in some cases is unintelligible. I will mention three. *Permeability* is used by physiologists to refer to the properties of the cell membrane in connexion with the admission of substances to the interior of the cell, but Mr. McDonagh uses it in application to molecules (pp. 60 and 76). The permeability of molecules is said to be increased by richness in carboxyl groups (p. 117), on what grounds I am unable to make out; in fact, I do not know what the expression means. *Electrolytic dissociation* is spoken of (pp. 45, 62, and 101) as being something that happens to ions, whereas ions are generally supposed to be the results of it. The word "ionised," in the case of electrolytes in solution, means the same thing; but Mr. McDonagh uses it in a sense which puzzled me greatly until I realised that a protein which possesses ions adsorbed on its surface is called by him "ionised" (p. 101). *Adsorption* should only be used to refer to condensation at interfaces between phases and is a function of surfaces as such. But Mr. McDonagh evidently understands something different, although I cannot make out what it is. This is shown by the assertion that active oxygen is necessary (pp. 46 and 107) acting as catalyst (p. 52). I accept his explanation with regard to the effect of increased size of particles, but in the "Links" the fact of increased size and increased adsorptive capacity are so frequently referred to without mention of increased

[1] Proc. Roy. Soc., 88 B. p. 166.

number that I think my mistake was justified. On p. 35, moreover, it is stated that in order to prove that the adsorptive capacity of the lipoid-protein particles is greater in syphilis it is only necessary to show that these particles are larger. In other places "adsorption" is merely chemical combination, a trivalent metal is said to "adsorb" three "atoms of hydroxyl ion" (p. 114), and in amino-thiobenzene the sulphur is said to be in a "more powerfully adsorbed state" when in the ortho-position as regards the amino-group (p. 136). In this connexion it is curious to note that Mr. McDonagh prides himself on not introducing new terms. It would surely have been preferable to do so rather than to introduce confusion by using well-known ones in ways peculiar to himself.

I pass on to the new remedies introduced. I am, of course, incompetent to discuss their clinical value, which is naturally independent of theories as to their mode of action. But I feel convinced that great mischief will result, both to the theory and the practice of therapeutics, if Mr. McDonagh's views are accepted on such slender evidence as that he gives. Although the importance of the subject may reasonably be held to warrant the length to which this letter has already extended, I must apologise for the space taken up. However we may disagree with the interpretation put by Ehrlich on his discoveries, there can be no doubt that many valuable compounds and methods have been introduced by him, and that his work has led to great advances in science. Mr. McDonagh's attack on Ehrlich (p. 120) because he patented salvarsan, although he was not engaged in medical practice, is particularly ungenerous from a man who is engaged in practice, but nevertheless allows the advertisements now appearing in the medical press. As to the suggestion on p. 122 that the preparation of a substitute for salvarsan ought to have been handed over to one or more medical men, I should like to know what medical man, with the exception of Mr. McDonagh himself, would have been willing to undertake the duty. A remark of an astonishing nature to a chemist is that on p. 121, where it is said that for two substances to be "absolutely chemically the same, it is necessary that they should be prepared in exactly the same way." So that glycine prepared by the hydrolysis of gelatin is not the same substance as when prepared by the action of ammonia on chloracetic acid, and "ferrivine" is only to be accepted as such when prepared under Mr. McDonagh's direction. "Intramine" is a representative of the large class of compounds which contain sulphur in organic combination. They certainly possess, as a rule, reducing properties, and intramine is used by Mr. McDonagh for this reason. But, as we have seen, his "oxidase-reducase" theory has no real foundation. As an interesting example of the mode of reasoning adopted take the case given on p. 150, where two injections of intramine are described as being followed by extraordinary improvement, while a third dose resulted in a state worse than the original one. Galyl, a true organic compound of arsenic, was then given with remarkably beneficial effects, practically amounting to cure. This is said to be a proof of the theory of oxidation and reduction, in that the arsenic compound as an oxidative agent was made effective by the previous administration of a reducing agent. The natural conclusion to be drawn is surely that intramine is useless, while galyl is a valuable remedy. We cannot, in the present state of science, give any explanation as to why certain metals have such powerfully toxic effects while others are harmless, but it may safely be said that it is not a question of valency. The nature of organo-metallic compounds does not seem to be appreciated by Mr. McDonagh. The metal must be in organic combination, in direct union with carbon atoms. Such compounds are not subject to electrolytic dissociation with production of metallic ions; therefore the valency, at all events in the sense used on p. 130 as precipitating power, does not concern us. If this were so, pentavalent arsenic would be more active than trivalent, whereas, according to the statements on p. 130, it is less so. We naturally ask what is the particular value of this class of compounds. It cannot be stated exactly, but it seems probable that the function of the organic part of the molecule is to facilitate passage through the cell membrane, so that the metal may be presented to sensitive constituents in the cell without being in the form of an ion. The presence of amino-groups favours this permeability. Aniline, for example, is toxic because it enters the cell; sulphanilic acid does not enter and is innocuous. There is, I think, some confusion introduced by the use of the terms "toxic" and "non-toxic" with regard to remedies. What we want, surely, is something which is toxic to the parasite and non-toxic to the patient, but we are unfortunately still in the dark as to what are the chemical and physical properties required. I fear that Mr. McDonagh's theories will not help us much.

Now iron in true organic combination is remarkably inactive, as we see in hæmoglobin. But do "ferrivine" and "aluvine" contain the metals in organic combination? The names given on pp. 146 and 147, "tri-para-amino-ferric-benzene sulphonate," and so on, suggest that iron is in similar combination with the benzene nucleus as is arsenic in salvarsan, but when the formula is examined it is seen to be neither more nor less than the iron salt of sulphanilic acid and no organic compound of iron at all. If the chemical name is given it ought to be ferric para-amino-sulphonate or, more simply, ferric sulphanilate. It is extremely unlikely that such a compound would have any special action different from an ordinary ferric salt. The name manganese sulphanilate is used on p. 144, so that I do not suggest that the misleading nomenclature is intended to deceive, but content myself with calling attention to it. If it were true, as Mr. McDonagh states (p. 167), that electrolytic dissociation is necessary for therapeutic action, organic arsenic compounds would be devoid of activity.

The "Links, &c." has the effect upon me of a physico-chemical nightmare. On p. 191 we read: "There is probably only one protein (in the resisting substance)—albumin; this by increasing the number of its amino-groups becomes globulin, by increasing its carboxyl-groups it becomes lipoid-globulin. An increase of carboxyl-groups results not only in making the reducing action greater, but also in increasing the size of the particle and rendering it more permeable, which results in that particle becoming less ionised." No wonder that, as we are told, the cell looks upon it as a foreign body after these astonishing transformations and that malignant disease results, as we read further on.

Mr. McDonagh does me the honour of stating his indebtedness to my "General Physiology." I trust that no more results of a similar kind will be laid to its charge, or I shall have to regret its publication. In answer to Mr. McDonagh's charge that I have not studied his research work nor repeated his experiments on serum, I can only say that if he will give references to where the experimental proofs of his assertions are to be found I shall be happy to look them up. As to experiments on serum, I have neither the time nor the necessary acquaintance with the special methods to be able to repeat them. I have, in the course of the above remarks, given all the evidence I can find that the lipoid-globulin is an oxidase-reducase system and pointed out that it is unconvincing; and this is the foundation of his elaborate theory. It is supposed to explain not only dyeing and staining and chemo-therapy, but also immunity and anaphylaxis. It is stated to follow "simply and logically" from "ascertained facts" and to be "deduced from established chemical and physical facts" (p. 199). Let me give an example of what are regarded as facts. On p. 178 we read: "Fever means an increase of hydroxyl-ion concentration and therefore more oxygen. ..... Reduction is only a means of increasing oxidation, as it forms the peroxide necessary for the oxidase system." No reference is given to experimental evidence, yet the next sentence begins: "In view of these facts," &c. The chemical equation given above is also a "fact." As to logical deduction, take the following (footnote on p. 152):—

> Intramine injected into the urethra causes a great increase of soluble phosphates and carbonates in the urine. ..... These are the salts which regulate the normal hydrogen-ion concentration of the external phase; therefore this observation proves beyond doubt that intramine acts on the oxidase-reducase system.

Mr. McDonagh complains that I represent him as holding that lipoid-globulin acts at the same time as an oxidase and a reducase. On p. 112 certain granules in the choroid plexus are stated to synthesise indophenol owing to the presence of active oxygen, and in the next sentence they are stated to have a reducing action due to the presence of active hydrogen. On p. 197 reference is made to the "fact" "that the adsorptive power of the active oxygen in the oxidase-reducase system is more marked than that of the active hydrogen," and on p. 198 to "those lipoid-globulin particles which are richer in active hydrogen than in active

oxygen." If any meaning is to be attached to these words they surely mean that active oxygen and active hydrogen are present together.

To sum up, I hold that no proof has been given that the lipoid-globulin particles form an oxidase-reducase system, nor that oxidation and reduction play any part in the mode of action of the antisyphilitic remedies in question. Mr. McDonagh must find another foundation for his theories or give better evidence for that which he puts forward.

I am, Sir, yours faithfully,

University College, London, July 18th, 1916. W. M. BAYLISS.

THE CARDIAC DISABILITIES OF SOLDIERS ON ACTIVE SERVICE.

To the Editor of THE LANCET.

SIR,—I must confess to a feeling of bewilderment not unmixed with dismay at reading the criteria of Captain John Parkinson in his inquiry into the cardiac disabilities of soldiers on active service in your issue of July 22nd. If, indeed, we are to accept his sixth conclusion that the absence of abnormal physical signs in the heart of a soldier should not prevent his discharge from the Army if, under training or on active service he shows breathlessness or præcordial pain whenever he undergoes exertion well borne by his fellows; then inasmuch as during the past 16 months some 1400 men who would correspond exactly to this description have been sent to me for an opinion and have invariably been returned to full duty, the amount of irreparable damage I would seem to have caused in this time may well be described as overwhelming!

If I have read his impressions correctly, Captain Parkinson is disposed to regard the symptoms of præcordial pain and breathlessness on exertion as of not merely positive but supreme value, since he states that if such symptoms bear no relation to increase of pulse-rate on exertion, the latter is therefore valueless in judging the functional efficiency of the heart (Conclusion 4). Now, inasmuch as præcordial pain is entirely a subjective sensation, as a scientific standard it must surely be disregarded as of little, it any, worth. The importance to be attached to breathlessness on exertion is again, in my opinion, exceedingly slight. The breathlessness of which such patients complain—men without abnormal physical signs—is not by any means a true dyspnœa. It is shallow breathing, what is often termed lazy breathing, in fact a panting rather than an attempt at adequate respiration. It can be improved out of all recognition by the imposition of strenuous breathing exercises and demands a species of physical discipline to which the subject has been hitherto entirely unaccustomed. On the other hand, the reaction of the pulse-rate to violent exercise is an experiment which can be performed with perfect scientific exactness, and why such evidence of the heart's efficiency is not valid I am quite unable to see. The malingerer will never have any difficulty in describing præcordial pain of all grades of intensity; it is not so very difficult for him to simulate breathlessness by shallow respiration; but it needs some art to adjust his pulse-rate so that its return to the normal after exercise is unduly prolonged.

As I have stated, on an average three men per day are sent to me with a history that they cannot do the square or fall out on parade on account of pain in the heart and getting out of breath. I base my criterion of their cardiac efficiency on the rhythm, the size of the heart, and the reaction to violent exercise; and in the event of no abnormality being detected in any of these, I have no hesitation in excluding cardiac disease, and recommending such men for full duty whatever their symptoms, some of which will frequently disappear after dental treatment and the remainder by breathing exercises, persuasion, and reassurance. I frequently hear from medical officers to whom such recommendations have been made that the men have trained on without further trouble. Of course, such a description does not apply to all of Captain Parkinson's cases of "soldier's heart," some of which are clearly instances of organic cardiac disease. On the other hand, some are very evidently of the type to which I am referring—faint-hearted in the spiritual sense, who have never been able to play games, and tend to give up at the least discomfort upon unaccustomed exertion.

The question is one of great importance from two points of view. The invaliding of a large number of men who with persuasion might have made efficient soldiers is, of course, a serious loss to the active force. In the second place, the act of boarding out as unfit for military service on the grounds of some cardiac disability is a serious burden in their future life to men to whom such a diagnosis has no other meaning than heart disease with the constant danger of sudden death.

I am, Sir, yours faithfully,

ADOLPHE ABRAHAMS,
Temporary Captain, R.A.M.C., Officer in Charge of Medical Division, Connaught Hospital, Aldershot.

Aldershot, July 22nd, 1916.

CONDENSER DISCHARGES IN PHYSIOLOGICAL EXPERIMENTS.

To the Editor of THE LANCET.

SIR,—Dr. F. Hernaman-Johnson writes in your issue of July 15th on the subject of condenser discharges, and urges physiologists to abandon the use of an instrument so notoriously incapable of standardisation as the induction coil. If he will read the numerous papers on electrical stimulation which have been published by Nernst, Weiss, Hoorweg, Professor and Mme. Lapicque, Keith Lucas, A. V. Hill, and others, he will see that the merits of the condenser discharge have been recognised by physiologists for 15 years or more, and that it is by no means the most instructive or the most easily controlled form of stimulus. Indeed modern theories of stimulation have been arrived at mainly by the use of progressively increasing currents and of constant currents of short duration, though it is true that experiments with condensers have contributed materially to the present state of our knowledge. In many experiments it is quite unnecessary to vary the time relations of the discharge, and in this case the break shock of an induction coil is often the most satisfactory form of stimulus. If necessary it can be calibrated with very great accuracy.[1] That the ordinary medical coil is incapable of standardisation is scarcely the fault of physiologists.

I am, Sir, yours faithfully,

E. D. ADRIAN, M.B., B.C. Cantab.

Farnborough, Hants, July 18th, 1916.

THE SHARPENING OF HOLLOW NEEDLES.

To the Editor of THE LANCET.

SIR,—The following may be of use to your readers who have occasion to use hollow needles very much and have trouble with keeping them in repair. Procure through an ironmonger, or from a dealer in the carborundum wares, slip No. 89. Sharpen the needle by holding it on a support, such as a cork in a bottle, lumen upward, and shank level,

and rubbing it at right angles to the axis of the needle with the round edge of the slip till a hollow ground effect is obtained. Then lightly touch the back edges of the level on the flat of the stone to get rid of the rough edge and to obtain a sharp point. This answers excellently for all sizes and natures of hollow needles, from hypodermic sizes to aspirator or pneumothorax instruments. The slips cost 1*s.* 6*d.* When new they are rather too fierce, and may be dressed by soaking in a fairly viscous oil, such as liquid paraffin, for a few hours. After that they need only a light dressing of oil to make them do their work, and no oil at all for platinum iridium instruments. The sharp edge of the

[1] Cf. Martin, American Journal of Physiology, 1912-1915.

slip is ideal for notching the necks of capsules containing vaccine and serums previous to opening.

I am, Sir, yours faithfully,

EDWARD BIGG.

Nordrach-upon-Mendip, Blagdor, Bristol, July 9th, 1916.

ELECTROLYTIC HYPOCHLORITE SOLUTION FOR SURGICAL USE.

To the Editor of THE LANCET.

SIR,—The credit of discovering that hypochlorite solutions are rendered more permanent by the use of magnesium hydroxide in a state of "gel" is due to Mr. F. W. Alexander,[1] medical officer of health of Poplar.

During the past year many experiments have been made, and the following method affords a reliable solution for surgical use: Magnesium chloride ($MgCl_2$ 6 aq.) 410 grammes and sodium chloride 325 grammes are dissolved with 1·5 grammes of potassium iodide in 9 litres of water. To this mixture magnesium chloride 20 grammes dissolved in water 500 c.c., and mixed with constant stirring to sodium hydroxide 8 grammes dissolved in 500 c.c. of water is added. The turbid solution of chlorides and iodide with the suspended "gel" of $Mg(HO)_2$ is then electrolysed with a flow of 1 litre per hour under a current of 3 to 5 ampères by means of thin Pt foil electrodes of 8 cm. by 2 cm. area. A permanent solution of hypochlorite yielding 3·5 to 4·5 grammes of available chlorine per litre results. The strength is estimated before sending to the wards by titration with decinormal arsenic solution. Magnesium chloride is obtainable at about 3*d.* per lb., and the current is taken by a shunt from the constant current in use for lighting the hospital. When the alternating current is used a small aluminium and ammonic phosphate rectifier is interposed. For use the solution is diluted with 3 parts of warm water, and in some cases sodium citrate has been added.

I am, Sir, yours faithfully,

T. GODDARD NICHOLSON, B.Sc., M.B. Lond., M.R.C.S.

London Fever Hospital, N., July 9th, 1916.

THE ADDRESS OF MEDICAL PRACTITIONERS SERVING IN THE ARMY.

To the Editor of THE LANCET.

SIR,—Practitioners now serving in the R.A.M.C. may wish to know what address to give for the next issue of the Medical Directory. As the military address is liable to change, and as they may return to civil practice unexpectedly, we recommend the insertion of the home address only.—We are, Sir, your obedient servants,

THE EDITORS OF THE MEDICAL DIRECTORY.

7, Great Marlborough-street, London, W., July 26th, 1916.

[1] THE LANCET, Jan 18th, 1908, p. 157.

Mr. T. E. Gordon, F.R.C.S. Irel., senior surgeon to the Adelaide Hospital, has been appointed professor of surgery in Trinity College, Dublin, in succession to Mr. E. H. Taylor. Mr. Gordon is not required to perform any duties at Sir Patrick Dun's Hospital.

ISOLATION HOSPITAL FOR PAIGNTON (DEVON).—A new isolation hospital is being erected for Paignton at a cost of £3200. It is nearly completed, and will shortly be opened.

TUBERCULOSIS IN BELFAST.—In reference to the work done at the Tuberculosis Institute, Belfast, a series of interesting tables have been submitted to the Tuberculosis Committee of the council of the county borough of Belfast by Dr. A. Trimble, the officer in charge, showing the work done in that department for the year ended March 31st, 1916. 1587 pulmonary cases were treated for tuberculosis at the dispensaries and 206 non-pulmonary. In the sanatoria and hospitals provided by the council 631 pulmonary and 10 non-pulmonary cases were treated, while in sanatoria and hospitals otherwise provided (Union Infirmary and Forster Green Hospital) 369 pulmonary and 1 non-pulmonary patients were received. Under the head "Treatment otherwise than in Dispensaries and Sanatoria (including Domiciliary Treatment)" there were 1410 pulmonary and 208 non-pulmonary cases. Altogether 4422 cases were treated for various forms of tuberculosis in Belfast during the year ended March 31st, 1916. The population of Belfast is now close upon 400,000.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Captain J. D. H. Acland, R.A.M.C., attached to the Somerset Light Infantry, was a student at St. Thomas's Hospital, London, and qualified in 1905. Previously to returning to England to join the R.A.M.C., soon after the outbreak of the war, he was medical officer of the Government Schools at Bulawayo, South Africa.

Captain T. Guthrie, New Zealand Army Medical Corps.

Captain H. G. Morris, R.A.M.C., qualified M.B., B.Ch. Oxon. in 1914, and shortly afterwards joined the R.A.M.C.

Lieutenant R. F. T. Newbery, R.A.M.C., attached to the Northamptonshire Regiment, qualified M.B., Ch.B. Edin. in 1915, and after holding house appointments at the Edinburgh Royal Infirmary for a short period he joined the R.A.M.C. last October.

Previously reported Wounded, now reported Killed.

Captain G. R. Heard, R.A.M.C., attached to the Royal Warwick Regiment, was a student at the London Hospital, qualifying in 1909, and was in practice at Devonport prior to joining the R.A.M.C.

Died of Wounds.

Captain R. W. Michell, R.A.M.C., was educated at Cambridge and at St. Bartholomew's Hospital, London, qualifying in 1894, and was in practice at Cambridge before joining the R.A.M.C. on the outbreak of war.

Died.

Colonel Sir V. A. H. Horsley, C.B., F.R.S. (see Obituary columns).

Lieutenant S. W. Burrell, R.A.M.C., was a student at St. Bartholomew's Hospital, London, where he gained the Warham prize for surgery, and qualified in 1915.

Surgeon E. W. Welchman, R.N., was educated at Queen's College, Birmingham, qualifying in 1883, and was in practice at Lichfield before becoming a surgeon in the Admiralty Transport Service.

Wounded.

Lieutenant R. M. Rowlette, R.A.M.C., attached to the Irish Guards.

Captain H. B. Thomason, R.A.M.C.

Lieutenant G. J. Fraser, R.A.M.C., attached to the Northumberland Fusiliers.

Captain H. N. Goode, R.A.M.C.

Captain A. Hamilton, R.A.M.C., attached to the West Yorkshire Regiment.

Captain C. A. Bernard, R.A.M.C., attached to the York and Lancaster Regiment.

Captain T. W. David, R.A.M.C.

Lieutenant C. B. Davies, R.A.M.C.

Captain L. D. Shaw, R.A.M.C.

Captain J. A. Cole, R.A.M.C.

Captain P. Walsh, R.A.M.C., attached to the Royal Welsh Fusiliers.

Captain R. M. Miller, R.A.M.C., attached to the Royal Welsh Fusiliers.

Captain W. A. Coats, R.A.M.C., attached to the Essex Regiment.

Lieutenant M. G. Pettigrew, R.A.M.C., attached to the Welsh Regiment.

Captain F. Sanders, R.A.M.C., attached to the Essex Regiment.

Captain H. P. Whitworth, R.A.M.C.

Captain W. K. Campbell, R.A.M.C.

Captain F. E. Chapman, R.A.M.C., attached to the Royal West Kent Regiment.

Captain S. W. McClellan, R.A.M.C.

Lieutenant M. McNiff, R.A.M.C., attached to the Middlesex Regiment.

Captain J. P. Charles, R.A.M.C., attached to the Highland Light Infantry.

Captain D. H. Derry, R.A.M.C., attached to the King's Royal Rifle Corps.

Captain D. J. Evans, R.A.M.C.

Captain C. F. Hacker, R.A.M.C., attached to the Hertford Regiment.

Captain F. W. A. Ponsford, R.A.M.C., attached to the East Surrey Regiment.

Captain C. R. Wills, R.A.M.C., attached to the Sherwood Foresters.

Previously reported Missing, now reported Prisoner.

Captain W. R. W. Haight, Canadian A.M.C., attached to the Canadian Mounted Rifles.

OBITUARY OF THE WAR.

JOHN CECIL RIX, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. C. Rix, who was killed in action in France on the night of July 5th–6th at the age of 40, was the fourth son of the late William Howells Rix, of Tunbridge Wells. From Tonbridge School he entered Trinity College, Cambridge, graduating B.A. in 1898, and continued his medical studies at the Middlesex Hospital, qualifying M.R.C.S. in 1902. He then joined his father and uncle in practice at Tunbridge Wells, where he became medical officer to the Convalescent Home and to the Invalid Children's Aid Association. He also acted for a time as medical officer of health and was police surgeon and school medical officer. He was much liked by the police of the town, who made him a presentation when he gave up this appointment. Captain Rix joined the Royal Army Medical Corps in April, 1915, and was gazetted captain a year later. He met his death from the effects of a shell explosion while he was attending to the wounded outside his first-aid station. His kindly disposition and genial manners had made him a general favourite in both official and social life, and his death is much deplored by his comrades. Captain Rix was unmarried.

GEORGE OLIVER MAW, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. O. Maw, who died in France on July 10th, at the age of 29 years, from wounds in action, was the only son of George Maw, M.R.C.S., of Shortlands, Kent. He was educated at St. Andrew's School, Eastbourne, and at Clifton College, going on to Pembroke College, Cambridge. After taking a first class in the Natural Science Tripos in 1909 he continued his medical work at St. Bartholomew's Hospital, where his studies were unfortunately interrupted by a very long and serious illness, which ended in a successful operation at the hands of Sir Victor Horsley. He passed the Conjoint Examination in 1912, and being prevented by the war from completing his examination for the M.B. Cambridge took appointments as house physician for six months at Bedford County Hospital and as house surgeon for a year at the Metropolitan Hospital. In January, 1915, he obtained a commission in the R.A.M.C., remaining in France until the time of his death. His fatal wounds were received while attending to injured men in the open and he died on his way to the ambulance.

One of his oldest friends, who was in the same house at school and in the same College at Cambridge, writes of Captain Maw: "I knew him well enough to appreciate his worth, his absolute truthfulness, fine character, and keenness in his work. His pluck was phenomenal, as we all knew long ago at the time of his operation. In dying for his country he crowns his well-spent young life, and we who mourn him will also rejoice that he has done all a man can do."

EDWARD WILLIAM LAWRENCE, M.B., CH.B. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain E. W. Lawrence, who was killed on active service in France on July 10th at the age of 28 years, was the eldest son of Mr. A. J. Lawrence, of Pontycymmer, Glamorgan. He was educated at Christ College, Brecon, and University College, Cardiff, and took the medical course at Edinburgh University where he graduated in 1910. After some experience as assistant in general practice and house appointments at the Royal Gwent Hospital, Newport, he entered into partnership with Mr. Wyndham Randall at Bridgend. On the outbreak of war he volunteered his services and obtained a commission in the Royal Army Medical Corps, becoming senior medical officer to a brigade at Rhyl and then going with the University Battalion to France, where he remained until his death. Fellow officers in writing to his partner describe Captain Lawrence as a general favourite in his mess. He exposed himself freely to danger in the performance of his duties and, it is added, "would go anywhere, nothing would stop him."

ALEXANDER STANGER SEABROOKE, M.B., B.C. CANTAB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. S. Seabrooke, who died in Mesopotamia on July 1st, from typhoid, at the age of 31, was the second son of Mr. J. Seabrooke, of Grays, Essex. He was educated at Tonbridge School, where he became head of his house, and at Christ's College, Cambridge, entering heartily into the life and spirit of the University. He was a member of the Mounted Infantry Corps. Entering Guy's Hospital in 1908, he had a successful academic career, and was recognised as a man of strong character, who inspired confidence in those with whom he came in contact. After qualifying in 1912, he held house appointments at his hospital for two years, surrendering the post of resident obstetric physician in 1915 to join the Royal Army Medical Corps. He soon became attached to the Rawal Pindi Hospital, with which, in November, 1915, he was transferred to Mesopotamia, where he remained until his death.

One of his hospital intimates writes of Captain Seabrooke: "A man of fine physique and an appearance which befitted his strong character, it is no exaggeration to say Seabrooke was one of the most popular men of his time at Guy's. His sympathy took practical forms: he was in the habit of visiting his old patients who were too feeble to attend at the hospital in their homes, giving them both advice and financial assistance. Whilst on active service he wrote letters of condolence

to the relatives of any soldier under his care who died. He corresponded regularly with his friends, and his letters were full of human interest. In the last of these, referring to the death in Egypt of one of his friends at Guy's, he says: 'He was a good fellow, and if one has to die, it is some satisfaction to one's people that one died doing one's duty.' Duty, self-sacrifice, and a consideration for others were Seabrooke's watchwords, and will keep his memory green in the hearts of the many sorrowing friends whom he leaves behind."

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieutenant J. H. Parr-Dudley, Royal Fusiliers, eldest son of Dr. A. D. Parr-Dudley, of East Malling, Kent.
Major V. L. S. Beckett, Yorkshire Regiment, youngest son of the late Dr. F. N. Beckett, of Ely, Cambs.
Second Lieutenant A. E. G. Mason, Leicestershire Regiment, second son of Dr. H. Mason, of Leicester.
Lieutenant T. M. MacQueen, East Lancashire Regiment, second son of Dr. T. MacQueen, of Eastbourne.
Major C. G. Phillips, King's Own Regiment, younger son of the late Dr. R. Phillips, of Bromley, Kent.
Private M. P. H. Blumer, Middlesex Regiment, only son of Dr. P. Blumer, of Muswell Hill, London, N.
Second Lieutenant W. E. Limont, Northumberland Fusiliers, only son of the late Dr. J. Limont, of Newcastle-on-Tyne.
Captain W. J. MacCombie, King's Own Scottish Borderers, only surviving son of Dr. J. MacCombie, of Rothwell, Northants.
Second Lieutenant E. P. Doyle, eldest son of Dr. E. A. G. Doyle, of San Fernando, Trinidad.
Captain C. V. Suckling, Royal Warwickshire Regiment, younger son of Dr. C. W. Suckling, of Edgbaston, Birmingham.
E. T. D. Fooks, Machine Gun Company, New Zealand Forces, youngest son of Lieutenant-Colonel Fooks, I.M.S.

AUXILIARY R.A.M.C. FUNDS.

A general meeting will be held in the Lecture Theatre of the Royal Army Medical College, Grosvenor-road, London, S.W., at 2.45 P.M., on Monday, August 7th, at which the Director-General will preside. It will be remembered that at a meeting held on June 26th it was decided to postpone consideration of the scheme formulated by a Provisional Committee[1] until the constituency had had a full opportunity of discussing its provisions. A large attendance of officers is desired at the forthcoming meeting in order to deal adequately with the important business which is to come up.

SCOTTISH MEDICAL SERVICE EMERGENCY COMMITTEE.

The Executive Committee having authorised the issue of the first call under the new system, arrangements have been made for hearing those who desired to put forward reasons for postponement. Sheriff Fleming, K.C., outlined the method of procedure to be followed, and referred to the very special responsibilities which had been placed on the medical profession. The President of the Royal College of Surgeons presented the list of the suggested staff of an Edinburgh Hospital for service abroad. Its formal approval completes the Scottish Hospital contingent, the Glasgow and Aberdeen hospitals having been approved at previous meetings.

BRITISH INTERNED PRISONERS OF WAR.—We hear from a member of the Swiss Commission appointed to visit the prisoners' camps in Germany that about 1000 British prisoners have been selected. These will have to pass a second commission, but it is hoped that 800 or 900 will shortly be interned in Switzerland, bringing up the total to 1200–1400.

MEDICAL IMPRESSIONS OF THE GALLIPOLI CAMPAIGN.—In the current number of the *Journal of the Royal Naval Medical Service* Temporary Surgeon J. N. MacBean Ross, R.N., gives the impressions of a battalion medical officer on the medical conditions of the Gallipoli peninsula between September, 1915, and January, 1916. The amount of sickness was such that all the sick men could not be sent to field ambulance, and hence every man who could carry on at all was kept with his battalion and treated by its medical officer. The sick-bay in the rest-camp consisted of only a small dug-out, with nothing more substantial than ground-sheets laced together to keep out rain, wind, and shells, and under these primitive conditions cases of dysentery, diarrhœa, paratyphoid, jaundice, trench fever, frost-bite, and nephritis were treated with the results which the writer relates. He thinks that the description of the course of the numerous cases which were not sent to hospital may give the reader a clearer conception of the real severity of certain war diseases.

TREATMENT OF LIMBLESS SOLDIERS.—It is announced that the Army Council has decided to accept the offer of the Committee of the Ulster Volunteer Force Hospital to give that place as an institution where limbless soldiers can be received and treated.

A RED CROSS REST-HOUSE AT HOBART.—At the suggestion of Sir Ellison Macartney, Governor of Tasmania, a rest-house with 20 beds and a day accommodation for 100 soldiers is being established at Hobart by the Red Cross Society.

A HOSPITAL FOR CANADIAN OFFICERS.—A new hospital for Canadian officers at Putney Heath, presented by Mr. W. Perkins Bull, K.C., containing 35 beds, was opened on July 19th by the Lord Mayor of London. Surgeon-General Jones, who was present at the opening, expressed the gratitude of the Canadian Army Medical Service for the gift. Intended primarily for Canadian officers, the hospital will also be open for officers of the Imperial Service generally.

THE EMPLOYMENT OF WOMEN DOCTORS IN MILITARY HOSPITALS.—The War Office has for long past utilised the services of women doctors as bacteriologists and radiologists. As the need of medical officers steadily grows, the openings for women in military hospitals widen. Some 40 medical women have recently been chosen for foreign service, of whom a number are to go to Malta. All of these possess special qualifications for the work to which they have been allotted. An American qualification has in special instances been recognised.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Preliminary Science Examination for the Licence in Dental Surgery held on July 18th, 20th, and 21st, the following candidates were approved in the undermentioned subjects:—

Chemistry and Physics.—Fanny Henriette Bachrach, London School of Medicine for Women; Harry Charles Blackmore, Polytechnic Institute; Arthur Leslie Buswell, Taunton School; Henry Valentine Croucher, Guy's Hospital; Nathaniel Gerson, London Hospital; Herbert Oliver Holmes, Guy's Hospital; Frederick Laurence King, Central Foundation School; Malcolm John Matley-Moore, Municipal Technical School, Birmingham; Charles Lindley Donald Pasmore, Technical College, Swansea; Edward Reinhold Pfaff, Bristol University; and Harry Mullins Worth, University College, Exeter.

Physics.—Levi Austin Bevan, University College of North Wales, Bangor; George Bernard Burke, Technical College, Finsbury; Allistair Hyland Grieve, Birkbeck College; and Herbert Augustus Spouse, special study.

Chemistry.—Jamshed Bejunjee Chenoy, Royal Dental Hospital.

LONDON SCHOOL OF TROPICAL MEDICINE.—The following were the successful candidates at the examination held at the termination of the fifty-first session (May–July, 1916):—

*H. L. Cumming and K. T. Jungalwalla (with distinction), J. B. Flamer-Caldera, S. C. Biswas, J. T. Watt, G. T. Makhijani, and Miss I. N. Clough.

* Dr. Cumming gains both the "Duncan" and "Lalcaca" medals. The former is awarded to the student who obtains the highest aggregate of marks for the session; the latter being awarded to the student who gains the highest marks for the academic year.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—C. P. Barber (Section I.), Charing Cross Hospital; and G. A. Crowe (Sections I. and II.) and H. M. Hobson (Section II.), London Hospital.

Medicine.—H. T. Lamb (Sections I. and II.), Guy's Hospital and Manchester; E. O. Morrison (Sections I. and II.), Cambridge and St. Mary's Hospital; and S. L. Szpigner (Section I.), London Hospital.

[1] THE LANCET, June 24th, p. 1280.

Forensic Medicine.—H. T. Lamb, Guy's Hospital and Manchester; and S. L. Szpigner, London Hospital.
Midwifery.—J. L. D. Buxton, University College Hospital; A. L. Malabre, Washington; J. S. Matthews, University College Hospital; A. McL. Pickup, Birmingham; and E. J. G. Sargent, St. Bartholomew's Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—G. A. Crowe, H. T. Lamb, and A. L. Malabre.

UNIVERSITY OF SHEFFIELD.—At examinations held recently the following candidates were successful:—

Final Examination for the M.B., Ch.B. Degrees.—Frederick Gamm, Lydia M. Henry, Frederick G. E. Hill, George K. E. Inman, Florence E. Millard, Robert H. Rae, and William Sharrard.
Third Examination for the M.B., Ch.B. Degrees.—Mary Andrews, Annie Clark, Ethel M. Mathews, and Winifred H. Wells (distinction in Pathology and Pharmacology).
First Examination for the M.B., Ch.B. Degrees.—Constance M. Chappell (distinction in Chemistry), Edgar S. Clayton, and Richard T. Lee (distinction in Chemistry).

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on July 20th the following having passed the requisite examinations were admitted Fellows:—

Ivan Wanless Dickson, M.B. Toronto Univ., M.C.P. & S. Ontario, M.R.C.S. Eng., L.R.C.P. Lond.; George Hamilton Ross Hamilton, M.B. Toronto Univ., M.C.P. & S. Ontario; William Howard Thomas, M.B., B.S. New Zealand; Henry Richard Hodgkinson, M.B., M.S. Sydney; Wesley John Jenner, L.R.C.S. Edin. (Triple Qualification); Bireswar Mitra, L.M.S. Calcutta, M.R.C.S. Eng., L.R.C.P. Lond.; and Charles William Sharp, L.R.C.S. Edin. (Triple Qualification).

QUEEN'S UNIVERSITY OF BELFAST.—At the summer graduation ceremony of Queen's University, Belfast, held on July 11th, reference was made alike to the number of professors, lecturers, and students who were serving in various parts of this widespread war, as well as to those who had received special distinction, like Captain J. A. Sinton, M.B., of the I.M.S., who gained the coveted V.C., and last, but not least, to those who had fallen. Among the latter were the names of F. L. Cleland, M.B., captain, R.A.M.C.; B. C. Letts, M.B., lieutenant, R.A.M.C.; T. D. Liddle, M.B., staff-surgeon, R.N.; H. F. McNally, M.B., surgeon, R.N.; and F. J. Wisely, M.B., lieutenant, R.A.M.C.—At examinations held recently the following candidates were successful:—

FIRST MEDICAL EXAMINATION.

Botany and Zoology.—Marion C. Alexander, Frederick M. Allen, Victor D. Allison, Eileen O. Bartley, Walter E. Beck, Joseph F. Blaine, John W. Bradbury, James S. Briggs, Cawthorne L. Broomhead, Robert J. E. Christie, Henry H. Coulter, Martha J. Craig, Alexander Cromie, Robert L. Dodds, William F. Donaghy, John S. Dudgeon, John H. Duke, Robert Duncan, John H. Dunn, Abraham E. Elliott, Maurice G. Emery, Patrick J. Flood, Helen R. Forbes, Patrick L. Fullen, James F. Gaussen, Thomas Gilfillan, Winifred E. Hadden, Henry Harris, Patrick J. Honan, Thomas J. Hull, Lydia N. Humphreys, Richard H. Hunter, Gilbert M. Irvine, Thomas R. V. Irwin, Robert S. Johnston, Winifred M. Johnston, James W. Kernohan, James S. J. Lee, Sydney W. T. Lee, Daniel V. McCaughan, Dorothy M. McCullagh, Philip J. McGarry, John J. McKane, Robert J. McMullan, Beattie McNeill, Henry McNeill, Eveline F. Magee, James P. Martin, Joseph Meban, Elizabeth Michael, Horatio N. Middleton, Philip F. Mooney, Edward Moore, John W. Nesbitt, James J. O'Reilly, John Patton, Robert Pedlow, John D. Reynolds, Joseph Reynolds, Frederick W. Robinson, James Scott, Laura G. H. Scott, William J. Simpson, Arthur C. Sinclair, George T. W. Sloan, Samuel H. Stewart, Kathleen R. Snodgrass, Margaret W. Snodgrass, Samuel A. M. Thompson, and James B. Wiley.
Chemistry and Physics.—Marion C. Alexander, John Cavanagh, Wm. E. D. Crawford, Robert L. Dodds, Patrick J. Flood, Charles L. Graham, Henry Harris, Thomas J. Hull, Dorothy M. McCullagh, James P. Martin, Joseph Meban, John W. Nesbitt, Martha Reid (Chemistry only), John D. Reynolds, Joseph Reynolds, James Scott, and Arthur C. Sinclair.

SECOND MEDICAL EXAMINATION.

Anatomy and Physiology.—William R. Abernethy, Samuel Ballantine, John Black, Crawford Blair, Helen M. Calwell, James Camac, Hugh Carson, John Caruth, Jane Copes (Physiology only), David Cromie, Eric A. Davison, Winnifred A. I. M. Doherty, Benjamin Herbert, Alexander MacFaul, Thomas H. McKenna, Robert J. McNeill, Olive Maxwell, Helen M. Murnane (Physiology only), Robert Nimmons, David G. Roulston, Margaret H. Russell, Alex. McM. W. Segerdal, Samuel Simms, Samuel Y. Sterling, Hugh J. Taggart, and James B. Wilson.

THIRD MEDICAL EXAMINATION.

Medical Jurisprudence and Hygiene.—Herbert Abernethy, John Barron, Annie E. E. Beattie, Fredk. C. S. Bradbury, Samuel F. Breakey, Frederick Campbell, Thomas I. Candy, Gladys E. Chambers, Janie Clarke, Joseph M. Clearkin, Gerard J. Crawford, Samuel E. Duff, Charles W. A. Emery, Stewart Fullerton, John Grimson, Samuel Hall, John M. Hosey, Mary E. Irwin, Albert E. Keown, Michael G. Kierans, Joseph G. M. Leyden, William J. Lyttle, Amy C. McCallum, John McGarvey, Daniel McLister, Henry F. Macauley, Edward A. Maguire, John A. Martin, Thomas Montgomery, Patrick J. Murnane, David A. E. Scott, Ruth M. Slade, and Samuel J. Smyth.
Pathology and Materia Medica.—Herbert Abernethy, John F. Ainley, Annie E. E. Beattie, Frederick C. S. Bradbury, Samuel F. Breakey, Frederick Campbell, Thomas I. Candy, Gladys E. Chambers, Janie Clarke, Gerard J. Crawford, Samuel E. Duff, William Graham, William Harvey, Mary E. Irwin, Albert E. Keown, Michael G. Kierans, William J. Lyttle, Amy C. McCallum, John McGarvey, William C. McKee, Daniel McLister, Henry F. Macauley, Edward A. Maguire, John A. Martin, Thomas Montgomery, David A. E. Scott, and Samuel J. Smyth.

M.B., B.CH., AND B.A.O. EXAMINATION.

William F. Algeo, James Boyd (second class), William Bryars, Alfred G. P. Campbell, George Chesney, Alfred C. Dickey, Grace M. English (first class), Francis Ewart (second class), Hugh E. Hall, James A. Harbison, Arabella C. Kirker, Nathaniel McCullough, Joseph P. McGinley (first class), Bernard W. McKinney (second class), Michael McMenamin, Frederick McSorley, John J. Marner, Thomas J. Marner, David Mitchell (second class), Elizabeth M. Moore, Margaret S. Purce (first class), Charles A. W. Ramsay, Robert J. Rea, William Saunderson, Thomas R. S. Thompson, Norman C. L. B. Tweedie, and John H. Vance.
M.D. Degree.—William W. D. Thomson (gold medal) and James M. Warnock.
Diploma in Public Health.—Alexander E. Knight, William J. MacKeown, and Charles J. Milligan.

TRINITY COLLEGE, DUBLIN: SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

PRELIMINARY SCIENTIFIC MEDICAL EXAMINATION.

Physics.—Joseph Eugene Deane, William Randolph Macnie, John Richard Waugh, Salman Louis Feldman, Harry Cristol Dundon and Mary Horan (equal), Joseph Hirschman, and Robert Sturgeon Chapman and John Joseph Martin (equal).
Chemistry.—Maurice Nurock, Eric Henry Cooke Allen, John Lait, Janie Millar Cummins, David John Browne, Francis Victor Small, Leonard Abrahamson, William James Alexander Russell and Robert Henry Mulhall Corbet (equal), James Alexander Smith, Doris Louisa Graham, Isaac Levy, Robert Dormer and Percival Israel Levitt (equal), William Randolph Macnie and Eric Richard Murray (equal), Joseph Ballantyne Maguire, Samuel Wallace Jamison and David Samuel Thomson (equal), Robert Sturgeon Chapman and Thomas Donald Gordon and William Bernard Pemberton (equal), Harry Cristol Dundon, Moira Mary Brown and Richard Victor Dowse and Essie Stuart Smyth (equal), Olive Baile, Christopher John Lawrence Brock and John Richard Waugh (equal), Salman Louis Feldman, William Burton Fox and Herbert Francis Mooney (equal), and James Joseph Patrick Kelly.
Botany and Zoology.—Annie Gwendoline Holmes Orr, Eric Henry Cooke Allen and Alice Elizabeth Lawlor (equal), Francis Small, William Bernard Pemberton, Robert Henry Mulhall Corbet, Frederick William Shegog, Essie Stuart Smyth, Edmund Cyril Smith, Albert Edward Dunscombe Phillips, David John Browne, Sybil Gertrude Odlum, Doris Louisa Graham, Maurice Nurock, Winspeare Toye Hungerford, Emily Elspeth Grace Baillie, Leonard Abrahamson, William Burton Fox, Hector Charles Chatterton Deane, Dorothy Stopford, Ernest Edmondson Benson and Doris Holland (equal), Francis Malone-Barrett and Robert Henry Satchwell (equal), Robert Dormer, Herbert Francis Mooney and Edith Florence Willock (equal), Percival Israel Levitt, Samuel Wallace Jamison and Vera Gladys May Menary (equal), John Lait, Cecil Samuel Wilson, William James Alexander Russell, James Joseph Patrick Kelly, Dermod Hubert Francis Milmo, Moira Mary Brown and Olive Baile (equal), Robert Young Crichton and Joseph Ballantyne Maguire and Herbert William Strong (equal), Elsie Anna Burns and Leo Vincent Clifford (equal), John Collins Blair, Margery Bouchier-Hayes and James Robertson Wills (equal), Patrick Mary Joseph Bobbett and Joseph Hirschman and Frederick Wynand Pienaar (equal), Christopher John Lawrence Brook, Isaac Levy, Henry Ignatius Emmet Powell, and Edward Haslett Frazer.

INTERMEDIATE MEDICAL EXAMINATION, PART I.

Anatomy and Physiology.—Cecil Emrys McQuade, Richard Counihan, John Henry Brenell Crosbie, Abgar Read Aidin, Frederick William Robertson, John Gerard Holmes, John Charles Callanan, Noelle Long, Richard Wood Power, Russell Warren, William Swirles Allardyce and James Sinclair Quin (equal), John Coolican and Thomas Madill (equal), Becher FitzJames Haythornthwaite, Albert Hugh Thompson, Victor George Walker, Johannes Tobias Mynhardt and Cecil Quinlan and Richard William Shaw (equal), William Joseph Hogan, Alfred Beckett, Louis John Murphy (Physiology, completing examination), and Richard Dominick Murphy (Physiology only).

INTERMEDIATE MEDICAL EXAMINATION, PART II.

Applied Anatomy and Applied Physiology.—Frederick Gill, Joseph Posner, Frederick William Godbey, Louis John Murphy, Eric Reginald Tivy, Francis S. G. Battersby, and Cecil Keller.

FINAL MEDICAL EXAMINATION, PART I.

Materia Medica, Pathology, Medical Jurisprudence, and Hygiene.—William Robert Fearon, Edward D'Arcy McCrea, Thomas Scannel McDonald, James Arthur William Cullen, Thomas Mulock Bentley, Charles Going Ambrose, Edward Francis Wilson, Paul Herbert Shelley Smith, William Joseph Hamilton, Meta Grace Jackson, Thomas Tabuteau, Patrick Casey, Herbert James Wright, Percy Crowe Parr, John Edmund Hill, Fleetwood William Porter Sullivan (Medical Jurisprudence and Hygiene, completing examination), Cedric Cowan Mecredy (Medical Jurisprudence and Hygiene, completing examination), Margaret Wolfe (Materia Medica and Pathology), Arthur Leslie Gregg (Materia Medica, Medical Jurisprudence, and Hygiene), Bryan Austin McSwiney (Materia Medica, Medical Jurisprudence, and Hygiene), and David Shields Prentice (Materia Medica, Medical Jurisprudence, and Hygiene).

FINAL MEDICAL EXAMINATION, PART II.

Surgery (B.Ch.).—Thomas Paul Chapman, Andries Adriaan Louw Albertyn, Charles Henry Comerford, John Armstrong Crozier Kidd, Philip Augustus Hall and Edward Oswald Marks (equal), Rupert Montgomery Butler Gordon and Alfred Henry Price (equal), Cedric Cowan Mecredy, Herbert Stratford Collins, Thomas Stanton, Violet Mabel Deale, Sydney Verner Furlong, Robert William Pritchard, Charles Owen James Young, Marie Annette Hadden and Edward Lipman and Crosbie Weir (equal), Esther Violet Adderley, and Herbert James Wright.

Medicine (*M.B.*).—Charles Henry Comerford, David Roderick Hennessy, Charles Lewers McDonogh, Philip Augustus Hall, Thomas Joseph Lane, Andries Adriaan Louw Albertyn, Edward Oswald Marks, Louis Blumberg and Thomas Stanton (equal), Thomas Galvin Roche, Crosbie Weir and Charles Owen James Young (equal), and Alfred Henry Price.

Midwifery (*B.A.O.*).—Thomas Joseph Lane, Frederick John Murphy, James Carter Ogilvie and William Frederick Wicht (equal), Andries Adriaan Louw Albertyn, John Philip Macnamara, Alfred Henry Price, Charles Owen James Young, Edward Oswald Marks, and Robert William Pritchard.

INTERMEDIATE DENTAL EXAMINATION.

Anatomy and Physiology.—Irene Dorman.

The following medals, prize, and scholarship were awarded:—Cunningham medal (Anatomy), Cecil Emrys McQuade. Purser medal (Physiology), Noelle Long and James Sinclair Quin (equal). Fitzpatrick prize, Thomas Joseph Lane. Medical scholarship (Anatomy and Physiology), Johannes Cornelis Fouché.

Sir Clifford Allbutt, K.C.B., celebrated his 80th birthday last week and received a presentation from the members of the medical profession at Cambridge.

MEDICAL MAGISTRATE.—**Dr. E. N. Burnett has** been appointed a justice of the peace for Newcastle.

ROYAL MEDICAL BENEVOLENT FUND.—**At the last** meeting of the committee held on July 11th 32 cases were considered and £264 granted to 26 of the applicants. A summary of the cases relieved will be given in a later issue.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.—The following subscriptions have been received since the publication of our last list:—

	£	s.	d.		£	s.	d.
Mr. A. Chapman	0	11	9	Society of Apothecaries of London (second donation—total £150)	100	0	0
Mr. L. E. Thomas	0	19	9				
Dr. G. D. H. Carpenter (fifteenth donation—total £15)	1	0	0				

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

OXFORD OPHTHALMOLOGICAL CONGRESS. — The seventh annual meeting of the Oxford Ophthalmological Congress was held on July 13th and 14th at Oxford, the Deputy Master, Captain P. H. Adams, R.A.M.C. (T.), presiding. The members of the congress were accommodated at Keble College, whilst the scientific work of the congress was carried on in the department of human anatomy, kindly lent for the purpose by Professor Arthur Thomson. Considering the circumstances the attendance was good. A discussion on the Relationship of Ophthalmology to General Medicine was opened in the morning by Sir William Osler, who dealt with the subject clinically. The following contributed papers: Mr. Walter H. H. Jessop, Captain Adams, Dr. F. E. Batten, Mr. J. Gray Clegg, Lieutenant-Colonel W. H. W. Elliot, Dr. Tyson, Mr. J. Hern, and Captain Stack. In the afternoon Sir Anderson Critchett reopened the discussion and dealt with the subject from a more general point of view. Mr. Harrison Butler, Mr. A. J. Ballantyne, Mr. J. Jameson Evans, and Mr. Leighton Davies contributed papers, and papers by Dr. James Taylor and Dr. M. McNaughton-Jones were read in their absence.

The morning of the second day was given up to addresses and demonstrations as follows:—An address by the Master, Mr. Sydney Stephenson, who was unavoidably absent, on the Diagnostic Value of Tubercle of the Choroid; Lieutenant-Colonel Elliot: Treatment of Ophthalmic Diseases by Indigenous Methods in India; Mr. Stephen Mayou: lantern slides showing some Orbital Tumours; and Mr. Harrison Butler: (*a*) Some Remarks on Spring Catarrh (with lantern pictures), and (*b*) the Result of Squint Operations. During the morning a resolution was brought forward, and unanimously passed, to the effect that the congress were of opinion that "all workers exposed to danger from flying particles, with especial reference to those engaged in munition factories, should be provided with and encouraged to wear suitable protective goggles." The afternoon was spent at the Eye Hospital, where a good number of interesting cases were shown by Captain Adams, Mr. St. Clair Roberts, and Mr. Harrison Butler. Short communications were made by Mr. E. Wood White and Mr. F. W. Sydenham. The proceedings concluded with a demonstration at the Ratcliffe Infirmary by Major Turrell, R.A.M.C. (T.), on the electrical treatment of warts and nævi.

The scientific museum, which was open throughout the meeting, contained some excellent demonstrations, amongst which the collection of paintings illustrative of tubercle of the choroid by Mr. Sydney Stephenson attracted special notice, as did those showing fundus conditions in various diseases by Mr. Ballantyne. Dr. F. W. Edridge-Green gave demonstrations on binocular vision and various subjective phenomena connected with the retina and their explanation in the theory of vision, and Mr. J. A. Menzies demonstrated the value of the Simpson light in the treatment of scar tissue in the cornea. Pathological specimens were shown by Captain Adams, Mr. Gray Clegg, Mr. Ballantyne, Mr. Norman Pike, and Mr. A. B. Cridland. A commercial museum was given room in the same building, and afforded good opportunity for the examination of the apparatus and instruments.

At the conclusion of the discussion on Thursday the Deputy Master and Mrs. Adams invited members and their friends to tea at 53, Broad-street, and at 8 P.M. the official dinner took place in the hall of Keble College, the Warden presiding.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Mesopotamia and the Dardanelles.

A Bill has been introduced into the House of Commons by Mr. ASQUITH to constitute two special commissions to inquire into the conduct of the operations of war in the Dardanelles and in Mesopotamia respectively.

On the debate on the second reading of the Bill on Wednesday, Mr. ASQUITH announced that the Commission of Inquiry into the operations in Mesopotamia would be composed of Lord George Hamilton (chairman), Lord Donoughmore, Lord Hugh Cecil, M.P., Sir Archibald Williamson, M.P., and Mr. J. Hodge, M.P. The proposed constitution of the Dardanelles Commission is:—Lord Cromer (chairman), Mr. Andrew Fisher, Sir Thomas Mackenzie, Sir F. Cawley, M.P., Mr. J. A. Clyde, K.C., M.P., and Mr. Stephen Gwynn, M.P.

Reports of Certifying Surgeons.

The Police, &c. (Miscellaneous Provisions) Bill has passed through Committee in the House of Lords. In the course of the proceedings in Committee Lord LATYMER moved, as an amendment, to omit the clause which abolishes the investigation of accidents by certifying surgeons except in specified cases. After some discussion the amendment was negatived by 40 votes to 7. The clause was therefore retained.

HOUSE OF COMMONS.

WEDNESDAY, JULY 19TH.

Medical Treatment of Discharged Wounded Soldiers.

Mr. HUME-WILLIAMS asked the Financial Secretary to the War Office whether soldiers discharged from the Army with a pension on account of wounds were left to pay, out of their pension, for any subsequent medical treatment that the wounds might require; and, if so, whether provision would be made for gratuitous treatment for discharged soldiers in so far as they suffered from the direct effect of wounds received in the war.—Mr. FORSTER answered: Soldiers discharged from the Army on account of wounds can, on application to the Secretary of the Royal Hospital, Chelsea, obtain treatment in a military hospital, provided there is a reasonable probability that their disability will be cured or materially improved thereby. While in the hospital their pension is raised to the full amount allowed for total disablement, and any allowance borne before discharge to which they may be entitled. A stoppage of 1*s.* per day is made for maintenance while they are in hospital.

Mr. HUME-WILLIAMS: Could not the same arrangement be made applicable to people in country districts who cannot get up to Chelsea Hospital?—Mr. FORSTER: Yes, the same arrangement would apply, and accommodation would naturally be found for them in the most convenient military hospital.

Mr. HUME-WILLIAMS: Where ought they to apply?—Mr. FORSTER: Apply by letter to the Secretary of the Royal Hospital, Chelsea.

Mr. WARDLE: Is it the practice of the War Office to discharge a man who is suffering from wounds before being admitted to a hospital?—Mr. FORSTER: No, these are cases where the wound breaks out afresh, or some further disability arises after discharge.

THURSDAY, JULY 20TH.

Control of the Sale of Cocaine.

Sir JOHN LONSDALE asked the Home Secretary whether he was now in a position to say what steps were proposed by the Government to deal with the sale of cocaine.—Mr. HERBERT SAMUEL replied: The sale of cocaine to any member of the Forces is already prohibited by Order 40 of the Defence of the Realm Regulations. Further steps, however, are necessary to put a stop to the illegitimate traffic in this drug which is now prevalent, and I am proposing to obtain at once an extension of the Regulations to enable the Government to control the sale of the drug generally.

Colonel NORTON GRIFFITHS: Did not the right honourable gentleman promise to take active steps in reference to the matter some time ago in answer to a question of mine?—Mr. SAMUEL: It has taken a little time to elaborate the form of the Regulation. It is completed, and I am awaiting a meeting of the Privy Council in order to secure its enactment.

Acute Mental Cases in the Navy.

Commander BELLAIRS asked the Secretary to the Admiralty whether he was aware that the experience of the war had shown that acute mental cases could not be adequately treated in general wards; and whether the fact that mental cases were distributed in the wards meant that there were no acute mental cases in the Royal Navy.—Mr. MACNAMARA wrote in reply: Cases of neurasthenia and acute mental cases are quite distinct and are treated by different methods. Cases of the former are treated in general medical wards with excellent results up to the present. Acute mental cases are treated in the special mental wards that are provided in our three large naval hospitals. The increase in the percentage of acute mental cases in the Navy since the war began has not been very great.

Commander BELLAIRS asked for what length of time mental and neurasthenic patients were treated in naval base hospitals before being invalided out of the service as incurable.—Mr. MACNAMARA replied: No definite time can be stated for which mental and neurasthenic patients are treated before being invalided as incurable. The time of treatment depends entirely on the type of cases, and as regards insanity particularly the question arises whether a patient is not more likely to recover in Yarmouth than in a general hospital. Generally speaking, it may be said that patients are not invalided until there is no chance of recovery within a reasonable time, or until it is evident that hospital treatment is doing no good.

Commander BELLAIRS asked what provision was made in the case of those who had been sent home to their relatives with so-called nervous breakdown, or neurasthenia; and whether consideration was given in cases where there was a relapse which necessitated closer supervision than relatives were able to give.—Mr. MACNAMARA answered: If the disability is attributable to the service a pension under the War Disablement Scale is awarded in accordance with the earning incapacity when discharged (if totally incapacitated the rate is 25*s.* a week), with allowances in respect of children and the usual additions for badges, medal, and petty time. If not attributable the pension or gratuity to which the man is entitled in respect of his service is awarded, a life pension being awarded for more than 10 years' service. As to the second part of the question, if the disability is attributable the urgent cases in which the treatment required is of a temporary nature are received again into a naval hospital.

Deaths from Heat-stroke in India.

Answering questions which were put by Major ASTOR relating to deaths amongst Territorials from heat-stroke in India, Mr. CHAMBERLAIN (Secretary for India) wrote: I have received telegrams from the Viceroy on this subject. On June 15th the Viceroy telegraphed as follows:—

"We regret to report 50 cases, with 12 deaths, from heat-stroke occurred amongst drafts *ex* hired transport *Ballarat* on the train journey between Karachi and Lahore. Troop train left Karachi June 5th with 13 officers and 1013 men. On reaching Rohri 32 men were removed to Civil Hospital, Sukkur, suffering from heat-stroke, of whom 12 died, and 18 more cases occurred before train reached Lahore. Train carried three medical officers, had two second-class carriages, fitted up as hospitals with fans and was provided with coffee shop and good supply of ice; no overcrowding, 30 men in four-wheelers and 60 in bogies; normal carrying capacity for troops is 36 and 72 respectively. Arrangements have been made to send to hill depôts all men who have been suffering from the rail journey. Orders have been issued stopping all further movement of troops by rail from Karachi to Northern India. A complete report of the occurrence will be furnished at an early date."

A further telegram on June 19th added that the total number of heat-stroke cases was 136, with 15 deaths. All sick reported doing well. On July 15th, in reply to further inquiry, I received the following telegram:—

"In reply to your inquiry dated July 11th Karachi was selected as the port of disembarkation as the majority of the drafts on board the *Ballarat* were for units in the 4th, 1st, and 2nd Divisions—namely, Quetta, Peshawar, and Rawal Pindi. Drafts for the Lucknow and Mhow Divisions disembarked at a later date."

To-day I have received a further telegram as follows:—

"With reference to the inquiries in your telegram dated July 14th the case is being investigated by a senior officer from Army Headquarters and a specially selected medical officer. They left for Karachi on the 7th inst. with instructions to visit all stations along the line where fatalities occurred, collecting evidence, and submitting a full report as soon as possible after their return to Simla about the 28th instant."

Leprosy as a Notifiable Disease.

Answering Mr. BURGOYNE, who asked whether he would consider the desirability of scheduling leprosy as a notifiable disease, Mr. LONG (President of the Local Government Board) said: The question whether it is desirable to make the disease notifiable is under consideration. I may add, however, that the number of cases of this disease in this country is extremely small.

Tuberculosis in Ireland.

Mr. PATRICK MEEHAN asked the Home Secretary whether he was aware of the need for adequate provision for patients in advanced infectious stages of tuberculosis in Ireland; whether he was aware that the effectiveness of the work of the local committees was seriously hampered by such cases spreading infection; and whether immediate steps would be taken to secure proper provision for such cases.—Mr. HERBERT SAMUEL answered: The importance of securing the isolation of patients in an advanced stage of tuberculosis has been duly recognised by the Irish Local Government Board, who had lost no opportunity of bringing the subject to the attention of the county councils. The matter, however, is complicated by the necessity of affording accommodation for such cases in reasonable proximity to their homes as well as by difficulties of finance and management which would result from the establishment of numerous specialised institutions. The recommendation which the Board has addressed to all the county councils has proceeded on the lines of the utilisation of the union isolation hospitals for this purpose by means of their transfer from the boards of guardians to the sanitary authorities and their subsequent adaptation for the reception of advanced tuberculosis patients. This suggestion is receiving attention.

Mr. MEEHAN asked the right honourable gentleman whether the Local Government Board had yet adopted a scheme for the domiciliary treatment of tuberculosis patients in Ireland; whether he was aware that the Local Government Board suspended the domiciliary part of schemes adopted by county committees in Ireland pending the preparation of an All-Ireland scheme; and whether, in the event of an All-Ireland scheme not being put into operation at once, the Local Government Board would permit county committees who had adopted domiciliary schemes of their own to put such schemes into operation at once.—Mr. SAMUEL replied: Domiciliary treatment of tuberculous patients is being carried out under the schemes of a number of county councils, but the Irish Local Government Board have advised the councils to proceed tentatively in this matter pending the complete organisation of their dispensary arrangements. In a few instances the Board, in accordance with instructions from the Treasury, by whom half the net cost of approved schemes for the treatment of tuberculosis is recouped, have taken exception to a monetary allowance for the purchase of ordinary subsistence for a tuberculosis patient under domiciliary treatment.

Mr. MEEHAN: Is the right honourable gentleman aware that the domiciliary treatment of patients costs 10*s.*, as against a much larger amount per week for sanatorium treatment; that there are a number of cases in Ireland which are fit for home treatment; and whether this scheme of the Local Government Board will be put into operation at once?—Mr. SAMUEL: I will bear in mind what the honourable Member has said.

Medical Arrangements in Mesopotamia: Sir Victor Horsley's Letters.

Mr. ASQUITH (Prime Minister) announced that the Government had decided to institute statutory inquiries into the conduct of the campaign in Mesopotamia and of the expedition to the Dardanelles.

In the course of a debate on the motion for the adjournment, in which the need for those inquiries was urged,

Sir NORVAL HELME desired assurances that information would be welcomed by the tribunals to be set up. He went on to say: My reason for asking the question is that yesterday, when Lady Horsley heard of the lamented death of her husband, who sacrificed his life in the public service, having left Egypt to go to Mesopotamia to overlook the medical interests of the expedition there, she desiring to contribute, so far as she was able, to that inquiry entrusted me with letters and extracts from her husband's letters bearing upon such matters as transport, medical supplies, the lack of water, and so on, in respect to that important enterprise. Seeing we are to have this inquiry conducted, I rose to say how anxious I was that there should be a clear understanding given to Members of this House or to the public generally having information bearing upon the conduct of that campaign that that information would be welcomed by His Majesty's Government; that we should have the opportunity of putting such facts as come within our knowledge before the Government. I do not presume, under present

circumstances, to say more. I feel, however, it is right that I should acknowledge the indebtedness I feel to Lady Horsley in the said circumstances. If in the debate to-day any facts in the correspondence of her late husband could be of use to or at the service of the House she was anxious that it should be, if the public interest was thereby aided.

Mr. MALCOLM, in urging the necessity of immediate inquiry, referred to the stock of drugs and dressings that had been kept in India. He said that the Director-General of the Indian Medical Service long ago pressed upon the Army Finance Department that it would be difficult in the case of a big war to get the necessary drugs and dressings from England. Five years before the war the Army Finance Department set its face against a project for the manufacture of medicines in India, and tried to starve it out, but the concern, being able to supply local governments and civil departments with drugs, became a success.

Colonel YATE spoke of the account he had received of the inadequacy in the equipment of the hospitals.

Mr. ANNAN BRYCE said that officers who had come home described in the most moving terms the misfortunes that arose from the want of hospital accommodation and supplies.

Mr. LLOYD GEORGE (Secretary for War) said that the inquiry must be a searching one. Meantime care had to be taken that the Force in Mesopotamia was properly equipped, and that the state of things complained of by honourable Members could not occur again, assuming what they had stated were facts. The War Office had now assumed responsibility for the future of the campaign. Generally, whenever there had been a requisition from the Government of India to the War Office, whether in respect of ordinary supplies or for the sick and wounded, it had always been honoured.

Sir JOHN JARDINE: Do those requisitions include those for medical officers?

Mr. LLOYD GEORGE: Certainly, several were requisitions for medical officers, which have been honoured.

Sir JOHN JARDINE: From this country?

Mr. LLOYD GEORGE: Yes, from this country. Sometimes the assistance had been secured from the Force in France, more especially, he thought, with regard to assistant doctors—a class peculiar to India and which had its training there. There was no doubt at all that that in a way was not a very satisfactory arrangement. The War Office had the responsibility for directing operations, the Commander-in-Chief had the responsibility for supplies, and the main responsibility for supplies must always remain with him because the only possible base of supplies, so he (Mr. Lloyd George) was advised, must be India. The Government felt that if the War Office was to be responsible for the direction of the operations it must also accept direct responsibility for the supplies as well, including the arrangements for the sick and wounded and the transports, and this arrangement had been come to with the Government of India that whilst India remained the base for the Forces in Mesopotamia and that Force continued to be administered by the Commander-in-Chief in India, the Commander-in-Chief would receive his instructions from, and be responsible to, the Army Council in regard to all matters of personnel, administration, and supplies to the Force in question. The War Office would take responsibility for the transport, that being the main difficulty. The right honourable gentleman then dealt at some length with the question of river transport.

Mr. MALCOLM: What are you going to do about the results of the Vincent Report? What use will that be put to?

Mr. ANNAN BRYCE: When will that report be published?

Mr. LLOYD GEORGE: The Vincent Report has not arrived yet, and therefore we do not know what it is. We have, of course, our ideas as to what it is, but we have not seen it.

Mr. CHURCHILL: Cannot you get it telegraphed?

Mr. LLOYD GEORGE: The Commander-in-Chief has his own observations to make upon it, and he is very anxious that they should accompany the report. It will be here in a very short time, and it will be one of the first documents placed before the Commission. The right honourable gentleman proceeded to discuss other aspects of the situation. The first duty of the Government was to see that things were put right. The second duty was to see if anyone had been responsible for negligence, if anyone through his negligence had inflicted pain and torture upon the gallant men who had tendered their lives to their country and who, through their great deeds, had made honourable Members proud of the race to which they belonged, that those men should be held to account.

Mr. DILLON said that statements had been laid before him which went to show that the medical provision made for the troops was absolutely scandalous. No adequate attempt was made to furnish the troops with drugs or with river transport, and the supply of medical men and medical orderlies was shockingly insufficient.

Sir HENRY CRAIK observed that he had been told by medical men how bad the state of things had been in Mesopotamia. He urged that the Vincent Report ought to be at once made public, and that it ought not merely to be submitted to the inquiry which the Government had announced.

MONDAY, JULY 24TH.

Deaths in Troop Train in India.

Replying to Sir CLEMENT KINLOCH-COOKE, who asked a question relating to the deaths in a troop train in India, Mr. CHAMBERLAIN (Secretary for India) said: I have directed the Government of India that, having fixed the responsibility for this deplorable incident, they are to hold the person or persons responsible to strict account.

The Sale of Cocaine.

In reply to Major ASTOR, Mr. HERBERT SAMUEL (Home Secretary) said: As regards the sale of cocaine a medical prescription is not required under the present law. The maximum penalty for illicit sale is six months' imprisonment and a fine of £100. The new regulations on this subject, which I announced in the House recently, will be submitted, I hope, at the next meeting of the Privy Council.

Mr. RAFFAN: Will provision be made in the new regulations for the supply of the necessary quantities of cocaine to dental practitioners, both registered and unregistered?—Mr. SAMUEL: Yes, sir, that is being done.

Mr. RAFFAN: For both registered and unregistered dental practitioners?—Mr. SAMUEL: I must ask for notice of that.

TUESDAY, JULY 25TH.

The Sale of Cocaine.

Mr. RAFFAN asked the Home Secretary whether the draft regulations relating to the sale of cocaine had been submitted to medical and dental governing bodies.—Mr. H. SAMUEL answered: The Royal College of Physicians has been consulted. I am not sure that any organisation representing dentists has been consulted. I shall take that into consideration.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

HAWKSWORTH, Mr., has been appointed Deputy Acting Medical Officer to the Exmouth District for the St. Thomas (Exeter) Board of Guardians.

HONAN, Miss B., L.D.S. Edin., Dental Surgeon to the Dorset Education Committee.

LEON, GEORGE ALEXANDER, M.A. Oxon., M.D. Brux., M.R.C.S., L.R.C.P., D.P.H. Eng., Temporary School Medical Officer to the Torquay Education Committee.

MASTERMAN, B. W. G., M.D. Durh., F.R.C.S. Eng., D.P.H., Medical Superintendent to St. Giles Infirmary, Camberwell.

STURDEE, EDWIN LAWRENCE, M.R.C.S., L.R.C.P., Acting Deputy Public Vaccinator to the Exmouth District for the St. Thomas (Exeter) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ALTON, HANTS, LORD MAYOR TRELOAR CRIPPLES' HOSPITAL.—Assistant Resident Medical Officer.

BEDFORD COUNTY HOSPITAL.—House Surgeon, unmarried. Salary as arranged, with board, &c.

BIRKENHEAD UNION INFIRMARY.—Female Resident Assistant Medical Officer. Salary at rate of £175 per annum, with board, &c.

BIRMINGHAM CITY.—Female Assistant Medical Officer for Infant Consultation work. Salary £300 per annum.

BIRMINGHAM CITY EDUCATION COMMITTEE.—Two Temporary Assistant School Medical Officers. Salary £300 per annum.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Three Assistant Surgeons.

BIRMINGHAM UNIVERSITY.—Lecturer in Physiological Department. Salary £200 per annum.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Salary £200 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Surgeons and House Physicians. Salary at rate of £120 per annum, with board, &c. Also House Surgeon to Throat, Nose, and Ear Department.

BROOK WAR HOSPITAL, Shooters Hill, Woolwich.—Resident Medical Officers. Salary £1 per diem, with board, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Salary £100 per annum, with board, &c.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary at rate of £140 per annum, with board, &c.

CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Temporary Assistant Medical Officers. Salary £7 7*s.* per week, with board, &c.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Senior House Surgeon. Salary £300 per annum, with board, &c.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—Resident Medical Officer. Salary £200 per annum, with board, &c.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

HÔPITAL ET DISPENSAIRE FRANÇAIS, 172, Shaftesbury-avenue, W.C.—Laryngologist.

HULL, VICTORIA HOSPITAL FOR SICK CHILDREN.—Female House Surgeon. Salary £100 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £200 per annum, with board, &c.

LINDSEY (LINCOLNSHIRE) COUNTY COUNCIL.—Locum Tenens Assistant Tuberculosis Officer for one month. Salary at rate of £400 per annum.

LIVERPOOL, BROWNLOW HILL INSTITUTION.—Female Resident Assistant Medical Officer. Salary at rate of £300 per annum, with rations, &c.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—House Surgeon for three or six months. Salary at rate of £150 per annum, with board, &c.

LONDON LOCK HOSPITAL (MALE), Dean-street, Soho, W.—Anæsthetist for one morning per week. Salary £21 per annum.

MANCHESTER CORPORATION.—Temporary Assistant Tuberculosis Officer. Salary at rate of £350 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with board, &c.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Northwood, Middlesex.—Resident Medical Officer. Salary £120 per annum, with board, &c.

NEWCASTLE-UPON-TYNE EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £300 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Temporary Assistant Physician. Also Temporary Assistant Surgeon. Salary £25 per annum to cover travelling expenses.

REIGATE BOROUGH.—Medical Officer to Maternity and Child Welfare Centre one afternoon a week. Salary at rate of £50 per annum.

ST. PANCRAS INFIRMARY.—Female Junior Assistant Medical Superintendent of South Infirmary, Pancras-road, N.W., and Junior Assistant Medical Officer of House adjacent. Salary at rate of £200 per annum, with board, &c.

SHEFFIELD CITY TUBERCULOSIS DISPENSARY.—Female Assistant Medical Officer. Salary £350 per annum.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Junior Female House Surgeon, unmarried, for Gynæcological and Maternity Departments. Salary £160 per annum, with board, &c.

SOUTHAMPTON, COUNTY BOROUGH ISOLATION HOSPITAL.—Resident Medical Officer. Salary £300 per annum, with board, &c.

STAFFORDSHIRE COUNTY MENTAL HOSPITAL, Cheddleton.—Female Assistant Medical Officer. Salary £270 per annum, with board, &c.

SUNDERLAND, THE ROYAL INFIRMARY CHILDREN'S HOSPITAL.—Female Resident Medical Officer for six months. Salary £100 per annum, with board, &c.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £250 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Cliff, Warwick; at Clonmel, Tipperary; at Grangemouth, Stirling; at Millom, Cumberland; and at Uffculm, Devon.

Births, Marriages, and Deaths.

BIRTHS.

FRANKLIN.—On July 19th, at nursing home, the wife of E. Morris Franklin, W.A.M.S. Abeokuta, Nigeria, and 20, Brightwell-avenue, Westcliffe, of a son.

HALLINAN.—On July 20th, at M.O.'s Bungalow, North Front, Gibraltar, the wife of Captain J. C. Hallinan, R.A.M.C., of a daughter.

LEE.—On July 26th, at 5, Anglesea-terrace, St. Leonard's-on-Sea, to James C. Lee, M.D., and Ethel Lee (née Gompertz), M.B., Ch.B.—a son.

LITTLEJOHNS.—On July 18th, at Trevarthian-terrace, Stoke, Devonport, the wife of Major A. S. Littlejohns, R.A.M.C., of a son.

RICHARDS.—On July 16th, at Hyde Park-mansions, W., the wife of Captain Owen Richards, R.A.M.C., D.S.O., of a daughter.

MARRIAGES.

M'GONIGLE—CAMPBELL.—On July 15th, at St. Matthew's, Bayswater, George Cuthbert Mura M'Gonigle, M.D., B.S., B.Hy., D.P.H., Temporary Captain, R.A.M.C., to Dorothy Evelyn, youngest daughter of the late Captain Charles Campbell and Mrs. Campbell.

PHILLIPS—JENKINS.—On July 18th, at Gwaecaegurwen, by the Rev. R. J. Roderick, George Stanley Phillips, Captain, R.A.M.C., only son of Mr. and Mrs. Phillips, Carmarthen, to Grace Jenkins, youngest daughter of Mr. Samuel Jenkins, J.P., and Mrs. Jenkins, Cwmgorse, Gwaecaegurwen.

RICHMOND—KELLY.—On July 8th, at the Consulate, Alexandria, Egypt, Captain Arthur Eaton Richmond, R.A.M.C. (S.R.), to Margaret May, daughter of Mr. William Kelly, of Tuam, co. Galway.

VEALE—DRURY.—On July 19th, at the Private Chapel of the Palace, Ripon, Rawdon Veale, M.D. Lond., Major, R.A.M.C. (T.), to Frances, youngest daughter of the Bishop of Ripon and the late Mrs. Drury.

DEATHS.

ACLAND.—On July 12th, killed in action, Temporary Captain John Henry Dyke Acland, R.A.M.C., aged 36 years.

BAKER.—On July 20th, at West Heath-drive, Golders Green, John H. Baker, M.D., of Bedford-square, London, aged 60 years.

BURRELL.—On July 22nd, Lieutenant Stanley Walter Burrell, R.A.M.C., of St. Bartholomew's Hospital, aged 25 years.

MICHELL.—On July 20th, of wounds received on July 3rd, Robert Williams Michell, M.D., F.R.C.S., Captain, R.A.M.C., of Cambridge, aged 56 years.

NEWBERY.—On July 14th, killed in action, Richard Fenton Theodore Newbery, Temporary Lieutenant, R.A.M.C., attached to Northamptonshire Regiment.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

STUDENTS' NUMBER OF THE LANCET.

INFORMATION intended for the Students' Number of THE LANCET must be sent WITHOUT DELAY, addressed to the Sub-Editor, and marked on the envelope "Students' Number Only."

THE MEDICAL PROFESSION IN 1816.

THERE is apparently no modern thesaurus of medical anecdotes. A century ago such works were gravely sent forth from the press, and may be said to mark the last phase of the period, of which Molière was the prime anti-medical satirist, when the whole world of medicine, from grave and learned doctors down to venal apothecaries, was regarded as a fit subject for ridicule or suspicion. In 1816, according to "Anecdotes Medical, Chemical, and Chirurgical; collected, arranged, and transmuted by an Adept," in two volumes, the physician sometimes boasted that he prescribed as well when he had drunk a great deal of wine as when sober. "I should guess," said the famous Dr. James Gregory, inventor of the "Mixture," "that it might be found in all physicians (to say nothing of the other limbs of the Faculty), who think as little what they are doing when sober, as they do, or might do, when drunk." The Adept's book of "Anecdotes" is dedicated to this James Gregory (the Third, really the Fourth), a distinguished Edinburgh professor in his time, and many quotations are made from his writings, which are singularly plain spoken as to the medical ethics and practice of his time. Such criticisms by a leading physician would fortunately be impossible to-day. "Some of the medical profession," he says, "out of pure love of science, and without the least necessity, have taken small-pox matter from the dead body of one who died of the worst kind of the disease, and have inoculated with it. A dead body, half putrid, has been dug out of the grave, where it had lain for some days, and small-pox matter has been taken from it for the same purpose." He has the greatest contempt for medical literature. "More than ninety and nine parts in the hundred of all that has been written on the Theory and Practice of Physic, for more than two thousand years, is absolutely useless. ..... A large proportion of those writings consists of controversies, generally carried on with the bitterest animosity." And the same he believes to be true of surgical writings. Yet this writer emphasises the fact that the profession, at the end of the eighteenth century, is rising in importance. The English surgeons especially have done well, he thinks, to dissociate themselves from the barbers. Medical students are cited by him as extraordinarily zealous in the pursuit of knowledge, though somewhat absurd in it. "Their debates on controverted points have often been conducted with all the violence of party-spirit; within my memory, some of them fought with pistols about their medical systems; many more were eager to do the same. ..... One zealot, out of stark love and kindness, resolving to convert me ..... came to my house on pretence of asking some questions about what I had taught in my lectures, and regaled me with a harangue, of which I understood not one-fiftieth part, but which lasted near an hour, and was delivered with such vehemence of gesture and passion, that he not only sweated profusely, but literally foamed at the mouth." Yet from among these controversial young men in Edinburgh grew up the generation of the Bells and of the Listons.

THE LATE SIR CHARLES BLANE.

A CORRESPONDENT writes:—Sir Charles Blane, Bart., R.N., who was lost in H.M.S. *Queen Mary*, represented the family of that famous surgeon in the Navy Sir Gilbert Blane who was with Rodney in 1782 and was made a baronet for bringing the sick and wounded back from Walcheren, and in 1829 founded the Blane medal given to naval medical officers who send into office the best journals of their practice.

"PATENT" MEDICINES.

IN the report, just issued, of the Commissioners of His Majesty's Customs and Excise for the year ended March 31st, 1915, it is explained that the Excise duties in force for medicine labels are 1½*d.*, 3*d.*, 6*d.*, 1*s.*, 2*s.*, 3*s.*, 10*s.*, and £1, according to the price of the medicine. The net receipts from these duties amounted in 1911 to £325,646, in 1912 to £327,857, in 1913 to £328,319, in 1914 to £360,377, and in 1915 to £333,777. The licence duty levied on makers or vendors of patent medicines is 5*s.* The number of these licences

issued and the receipts therefrom were, in 1911, 42,697, £10,673; in 1912, 43,131, £10,781; in 1913, 43,118, £10,780; in 1914, 43,156, £10,791; and in 1915, 42,731, £10,686. These figures apply to Great Britain only, neither the medicine stamp duty nor the licence duty extending to Ireland.

ACKEE.

To the Editor of THE LANCET.

SIR,—With reference to the investigations of Dr. H. H. Scott, Government bacteriologist to Jamaica, referred to in an annotation in THE LANCET of July 8th, and incriminating the "ackee" as the cause of vomiting sickness, it may be worth mentioning that in West Africa, where the tree *Blighia sapida* is indigenous, the native belief is that the poisonous property resides in one portion only of the fruit, the removal of which is said to render the remainder harmless. The fleshy aril clasping the base of the large seeds is the edible portion, and in the aril the central fibrous raphé is bitter and is stated to contain the poisonous element. This bitter portion is therefore removed before eating, whether uncooked or after boiling or roasting. The Yorubas, knowing this, call the dangerous part *iku*, meaning *death* (perhaps facetiously, as in the slang use of the expression "sudden death" in reference to some attractive but doubtful comestible). The Yoruba name for "ackee" is *ishin*, and tribal knowledge of the matter seems to have become crystallised in a proverb meaning "He who knows how to eat the *ishin* knows enough to remove the poison from it."

I am, Sir, yours faithfully,

J. M. DALZIEL,

Edinburgh, July 21st, 1916. Sanitary Officer, Lagos.

DIGITALIS LEAVES IN CORNWALL.

SOME of the school children have been gathering the leaves of the foxglove in Cornwall. They have to be despatched the same day as gathered, and are sent to a manufacturing firm of chemists in London, who pay 12*s.* per cwt. for sound leaves of a good green colour. The railway rate is high, about 5*s.* per cwt. The profit on the sale of the leaves goes towards the school War Charity Fund.

WANTED, A HOME.

To the Editor of THE LANCET.

SIR,—The widow of a naval officer, with pulmonary tuberculosis apparently arrested and a weak heart, would like to find a comfortable home. At present she is able to take care of herself, and could contribute a guinea a week towards her maintenance.

I am, Sir, yours faithfully,

July 24th, 1916. R. G.

Logician.—Where an age term is employed an actual date must be fixed—there is no possibility of recognising a physiological age. If the Local Medical War Committee is doing its work properly the abuses mentioned should not occur. Will our correspondent give categorical examples of nepotism, when a most useful inquiry might follow?

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. R. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. R. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

MANAGER'S NOTICES.

THE INDEX AND TITLE-PAGE TO THE LANCET.

January to June, 1916.

IN view of the Government restrictions upon the supply of paper, and the shortage of paper quite apart from these restrictions, the Index and the Title-page to the volume of THE LANCET which was completed with the issue of June 24th have been printed separately, and copies have been supplied gratis to those subscribers who have, up to July 27th, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such application should please be sent in at once, direct to the Manager, and not through Agents.

Volumes and Cases.

VOLUMES for the first half of the year 1916 will be ready shortly. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

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To be obtained on application to the Manager, accompanied by remittance.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 26th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 20	30·170	N.W.	...	112	75	56	58	62	Fine
,, 21	30·226	S.E.	...	121	77	60	60	63	Overcast
,, 22	30·220	E.	...	117	70	59	57	59	Overcast
,, 23	30·190	N.E.	...	65	62	52	51	53	Overcast
,, 24	30·196	N.E.	...	72	60	52	52	54	Overcast
,, 25	30·154	N.E.	...	117	71	54	57	59	Cloudy
,, 26	30·140	S.E.	...	110	73	57	57	60	Overcast

The following magazines, journals, &c., have been received:—Revista del Circulo Médico de Córdoba, Magazine of the London School of Medicine for Women, American Journal of Orthopædic Surgery, Bulletin of the Johns Hopkins Hospital, Proceedings of the Royal Society of Medicine, St. Thomas's Hospital Gazette, Biochemical Journal, Surgery, Gynecology, and Obstetrics, American Journal of Obstetrics, Journal of the Royal Naval Medical Service, Medical Times, Pediatrics, Maryland Medical Journal, La Clinique Ophtalmologique, Clinical Medicine, &c.

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Y.—"Yearly Contract."

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